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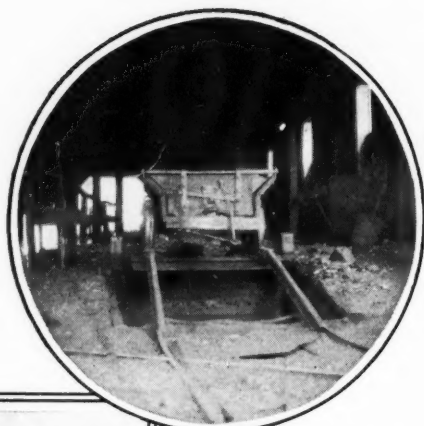
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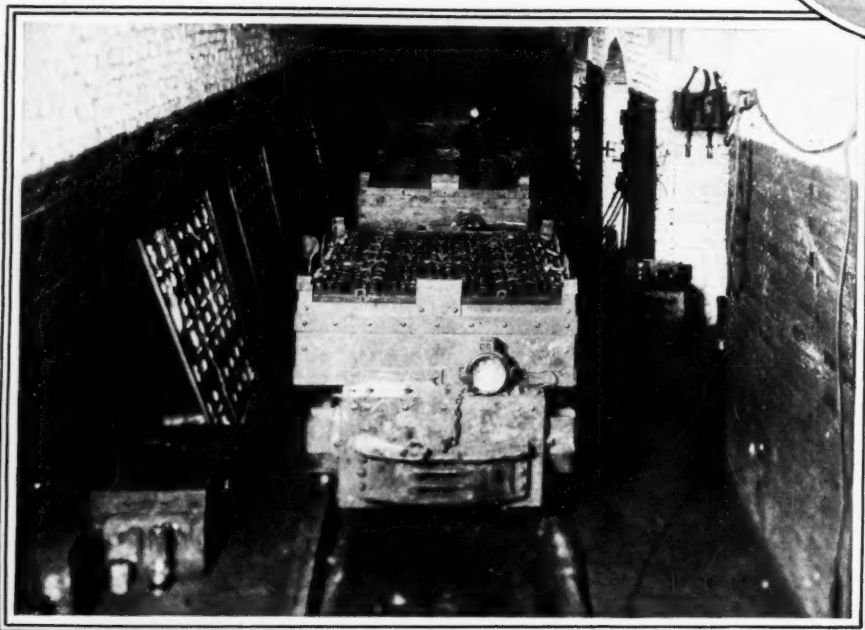
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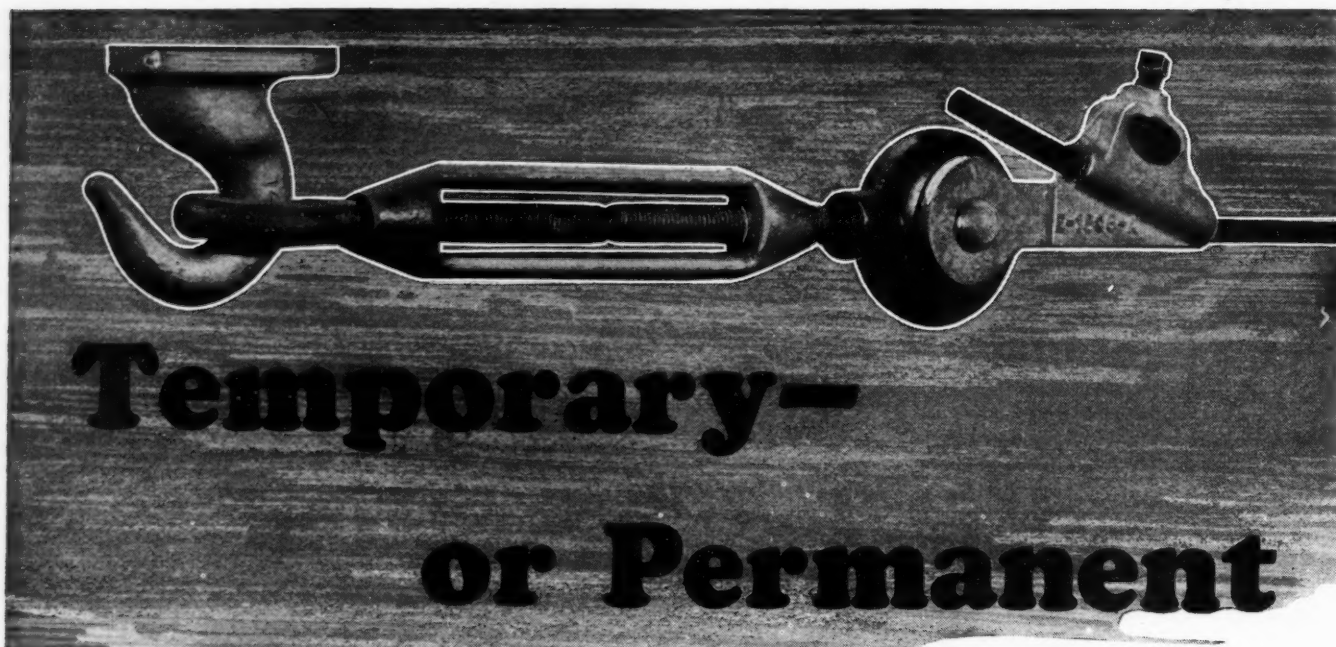
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Your Under-the-Hill Problems

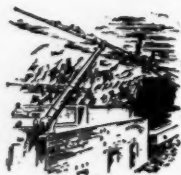
Coal Age has been giving diligent attention to problems close to the working face. In "Underground Management" every week will be found reference to the problems of mining's nether world. Next week we print an interesting discussion by E. O'Toole on roof action. He shows why it is so important that the roof should break clear up to the surface. His comparison of roof to a girder, though not new, brings some of the problems of roof control appreciably nearer solution. This week in the underground department is given the discussion at Pittsburgh, Pa., on turret cutting and vertical shearing. The report is well worthy of perusal.

Our Readers' Views

The Discussion page also is lively. What our friends think of the issues discussed in the editorials and articles makes interesting reading. You will remember the Huber paper on mine fans. Next week we run a critique of that article by someone who believes that our modern practice is not at fault and does not need revision in the direction of backward-running blade fans. This week, Graham Bright gives the hoist at Harworth the "once over" and after taking exception to a dozen features he remarks, in effect, that if it weren't for these it would be all right.



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COAL AGE

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Devoted to the Operating, Technical and Business
Problems of the Coal-Mining Industry

R. Dawson Hall
Engineering Editor

Volume 29

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Number 15

Safety in Ventilation

ONE IMPORTANT feature in ventilation is illustrated by the Minister Stein explosion. A fall of rock in an entry entirely blocked the air. A mine amply supplied with air suddenly became deprived of all circulation. Obviously, the mine would have been safer had there been two returns. In that mine it would have been necessary to drive the headings in the rock, for they were what our metal-mining friends would call crosscuts running as they did, from the shaft to the deposit, but where there are drift mines and shafts that intersect the bed worked, two intakes and two returns can usually be constructed with relative ease. If one falls in, the other is available. Many mines have this advantage already and it is often quite helpful in recovery work. An entry of large size is not as safe as two entries of an equal cross section, because the larger the entry the more likely it is to cave and because with two entries both will not cave at the same time.

Robert M. Lambie

THE BITUMINOUS industry is proud of Chief Inspector Lambie, of the West Virginia Department of Mines. He has shown great courage and leadership in the rescue and restoration operations following mine explosions and fires, and an untiring zeal in the promotion of safety. From his close associates come several stories as to his intrepidity in the presence of great danger.

The tales of his tireless efforts during the Benwood and Barrackville explosions are now history. Last fall he acceded to a request from the state of Tennessee to lead in a search for eight bodies in a fire zone which had been sealed for three months after an explosion in the Rockwood mine. He directed and led the rescue teams during the recent Jamison explosion. Soon after, he was called to the southern part of West Virginia to fight a fire in the Paint Creek mine. During this undertaking he was exposed to carbon monoxide and as a result was for a while confined to a hospital.

In the meantime he was asked to take part in the recovery work at the Horning mine in Pennsylvania. He telephoned his willingness to do his bit in this work, but soon after suffered a breakdown which compelled him to rest. Then came the Eccles explosion and his was the responsibility for the safety of the rescuers and of those who were rescued. Though he was then in the early stages of convalescence from carbon-monoxide poisoning and had been advised to rest, he took upon himself the task of leading rescue teams to a barricade in the Eccles mine where ten men were found alive. On reaching this barricade he collapsed, and after being administered oxygen for an hour, he

was carried unconscious from the mine. Now he is spending most of his time in the open air while slowly regaining his former good health.

The industry appreciates his efforts, and West Virginia is proud of him, as one of the greatest fighters of flame, smoke and gas, and as an exponent of the safety movement which under his leadership is making much progress. All join in trusting that hereafter he will curb his one dangerous tendency, to overtax his system in the pursuit of duty.

Broken Ropes

RECENTLY an electric elevator in a comparatively new hotel fell from the third floor to the basement, injuring a number of persons. An investigating committee reported that the breaks occurred in or near the sockets and that tensile tests on pieces of the broken ropes showed each to have sufficient strength to hold double the load on the elevator when it fell.

A few years ago at a certain shaft mine it became necessary to bring a 10-ton locomotive to the surface. The age of the hoisting rope was not known, but an inspection indicated little wear on the outside strands and not a broken wire in sight. The locomotive was hoisted, but a few days later the rope broke with the regular 3-ton load. The break occurred in that part of the rope which was located at the head sheave, whenever the cage was at the bottom of the shaft.

In a handbook published by one of the wire-rope manufacturers it is recommended that resocketing be done every six months, or under certain conditions, every three months. A portion of the rope should be cut off so as to get rid of any crystallized or corroded portion at the socket, and to change the rope position with regard to the headsheave when the cage is at the bottom. Other rope manufacturers advocate resocketing, according to service, at definite intervals such as once a year.

Generally speaking, mine hoisting ropes do not get the attention that they need. Inspections are superficial, records not complete, and resocketing neglected. Replacing the rope with a new one at certain intervals regardless of condition is good practice. Because of the expense, however, some users are tempted to keep the rope in service longer than the stated time and yet they do not resocket it because they expect to renew the rope in a short while. Mine ropes should be resocketed every three, six, nine or twelve months, according to service, and should be renewed at regular intervals regardless of the outside appearance of the rope. A counter should be attached to the hoist indicator to total the trips made by the cage during the life of the rope. This information would be a good guide to indicate when the rope should be resocketed and renewed.

More Than Dividends

STOCKHOLDERS of the Coal River Collieries Co., the operation financed by members of the Brotherhood of Locomotive Engineers and their friends, held their annual meeting last week. Following the precedent established a year ago, the session was preceded by an inspection trip over the company's properties near Huntington, W. Va. About two hundred of the worker-capitalists made up the inspection party. These men and women, exhibiting a pardonable pride in their partnership, acquired first-hand information upon working conditions by actual contact with the miners.

That the company in which they have invested a part of their surplus has never paid a dividend appeared to cause no great concern. They have been learning things about capital and capital's share in the products of labor in a way no polemic could teach. They are discovering, too, the unreality of the line which divides capital from labor. Such lessons are more valuable than dividends to future industrial peace and prosperity.

Unbalancing the Power Demand

IN THESE days of severe competition for markets it behooves the coal mines to reduce their costs of production by all means possible. Although the expense entailed for power is usually one of the smallest components making up the total cost per ton f.o.b. yet where this can be lowered it is well worth while. The margin on which coal is produced is usually so small that one or two cents shaved from the cost may mean all the difference between a profit and no profit or between breaking even and sustaining a loss.

One of the ways of cheapening the cost of power, regardless of whether it be purchased or generated is to use it steadily at as nearly a uniform rate as possible throughout the entire 24-hr. day. The greatest efficiency is attained when both the power-generating and power-consuming equipment is operated to approximate capacity all the time. Unfortunately this condition can be maintained by but few industrial enterprises, and it becomes a problem as to how closely it may be approximated at any one mine. In many cases it is possible to so juggle the various power-consuming operations as to render the total load or demand approximately uniform.

The chief power consuming operations about the mines include: Hoisting, haulage, cutting, ventilation, pumping, preparation, shops, lighting and battery charging. In any particular mine one or more of these operations may be totally absent while in many if not even most cases two or more must be performed simultaneously. Thus preparation is the logical complement of hoisting, which in turn, must be prosecuted concurrently with haulage. On the other hand lighting usually attains its peak at a time when hoisting is at its minimum; the same is true also of battery charging.

It becomes possible therefore in many instances to balance the various loads one against the other with the result that fair uniformity in power consumption is attained throughout the entire day. Thus the day load might logically comprise haulage, hoisting, preparation, ventilation and shops while the night load would be made up of cutting, ventilation, pumping, lighting and battery charging. How nearly a full load factor

may be maintained throughout the entire day will depend on the relative sizes of these various loads especially on the magnitude of the dewatering problem, and the flexibility with which it can be handled. Some mines afflicted with large quantities of water have such larger pumping installations that the load factor is maintained at practically 100 per cent at all times.

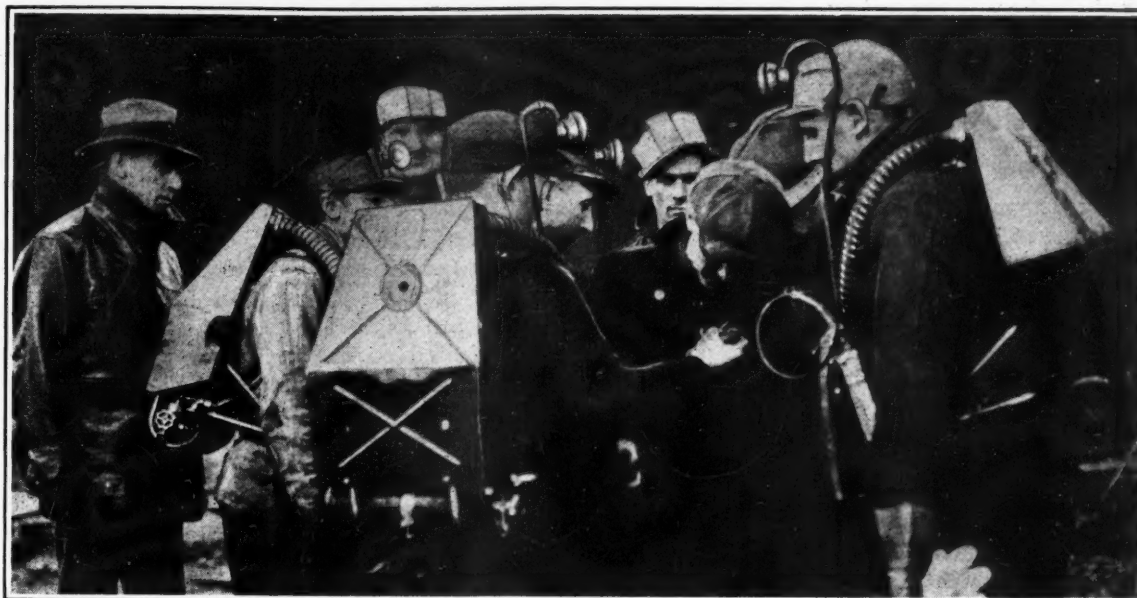
A disturbing influence that sometimes makes itself manifest in any scheme aiming at the preservation of unity load factor is the attitude of mine labor. Thus in the southern Illinois field the union will not countenance operation of coal cutters or mechanical loaders at night except on entry driving or other development work. Inasmuch as the pumping or dewatering load in this region is comparatively inconsequential, this throws all of the bigger operations, so far as power consumption is concerned into the day shift thus rendering its load vastly greater than that carried during the night, utterly destroying all semblance of balance between the two periods. This naturally increases the cost per ton of mine output in a direct proportion.

Where the problem of mine drainage is as light as it is in southern Illinois it would probably be difficult if not impossible to exactly balance the day and night power demands and thus obtain the much-desired 100-per cent load factor throughout the entire 24-hr. period. A transfer of the comparatively large power consumption for cutting from the day to the night shift, however, would do much to equalize these two loads especially where hoisting is done by steam as is the case at many of the mines in this region. It would thus tend to lower the cost of coal and permit the Illinois product to compete on more nearly equal terms with that from other fields.

And although it is quite true that the power bill represented by a ton of coal on car at the mine is one of the lesser components in its cost, it is nevertheless of appreciable and measurable magnitude. It could be reduced by careful balancing of loads. This would be beneficial to miner and operator alike as it is to the manifest interest of each to meet the fierce competition of other fields. By arbitrarily refusing to permit a balancing of the power demands of the day and night shifts therefore, the miners' union, figuratively if not literally, snaps the hand that feeds it.

To Make or to Mend

ECONOMY is not assured by having inadequate forces at the mines, in management, repair or accident prevention. With the force cut down too low the work is always behind. Men are busy correcting mistakes that should have been avoided, repairing wrecked equipment that should not have been damaged, explaining the shipment of inferior coal that never should have been loaded, accounting for excessive slack that should not have been produced. The forces around the mine under such a régime becomes defensive, not aggressive; they have to content themselves with the vain hope that nothing will happen, for hope takes less time and less money than prevision and prevention. Figuratively the management arrives breathless at every problem and cannot do it the justice it deserves. System goes to the wall; records are not kept; nothing can be found, and it is not long before a smoothly working organization breaks entirely down.



Procedure at Horning Mine Disaster Exemplifies Strategy to Be Adopted After Explosions

Attack on Fire Area Planned in Detail Prior to Recovery and Charge of Operations Entrusted to Leaders of the Three Shifts by Which the Work Was Conducted

By Alphonse F. Brosky

Assistant Editor, *Coal Age*
Pittsburgh, Pa.

MUCH ATTENTION has been given to the explosion in the Horning mine of the Pittsburgh Terminal Coal Corporation, among other reasons, because of its location in the industrial and bituminous coal center of the country, within a few miles of Pittsburgh. Representatives of companies which produce the bigger portion of the tonnage in the Pittsburgh district either visited the mine or tendered their assistance during the restoration and recovery proceedings. The state departments of mines and the U. S. Bureau of Mines also were well represented.

Added interest has been taken in the information furnished by a few men who escaped the explosion by a matter of minutes after having been engaged with the victims for about six hours in fighting the mine fire, of which the explosion was an aftermath. Though exact knowledge of the explosion itself is not available, the survivors brought with them to daylight information which, with that derived otherwise, has been made the basis of many theories as to just what happened. The purpose of this article is to bring out the lessons which the explosion and the subsequent recovery of the mine teach. The officials of the Pittsburgh Terminal Coal Corporation assisted in the preparation of this

The headpiece shows rescue men at the Horning Mine searching a fellow worker to see if he is carrying any matches or smoking material.

article by placing at my disposal the records which were kept during the recovery and restoration work.

A brief review of the events prior to the explosion is appropriate at this point: An undercutting machine, equipped with an open starting box, ignited a feeder of gas in a clay vein at the face of the Sixteenth Right butt entry of Section 4, at about 10 a.m. on the day of the explosion. The flame spread to insulating material, oil and coal dust on and about the machine. Attempts to beat out the fire and later to quench it with water failed. It was decided then to seal off this entry at A and also at B in the Fifteenth Right butt entry which runs parallel to it. Work on the construction of these stoppings began about 2 p.m. They were in a fair way of completion when the explosion occurred, at about 4 p.m. A more detailed account of these earlier events appeared in *Coal Age* of March 18.

A map of the affected workings is shown in the accompanying figure. The territory inby of Eleventh and Twelfth Right butt entries was ventilated by a split carrying about 16,000 cu.ft. of air. These two butt entries served as intakes from an air shaft which is located in the adjoining No. 3 mine close to the boundary between it and the Horning, or No. 4, mine and at a point that is about 3,000 ft. from the face of the Sixteenth Right butt entry where the fire occurred and the explosion originated. The air of this split was

conducted through the Seventh and Eighth face entries and returned through the Ninth face entry to the overcast marked *C* where it crossed over the Eighth to the Seventh face entry which from this point on was used as a return and not as an intake. Accordingly, Sixteenth Right butt entry served as an intake and Fifteenth Right butt entry as a return.

STOPPINGS HAD BEEN BLOWN OUT

About three hours after the explosion a group of men entered the mine for the purpose of exploring as much of Section 4 as possible. They found that ventilation had been crippled because the stoppings between the face entries of this section, inby of Eleventh and Twelfth Right butt entries, has been torn out by the explosion. The roof of the overcast at *C* had been lifted.

The result was that all three of the face entries inby of this point were serving as intakes, whereas before the explosion the territory was ventilated by a split in which two entries served as intakes and one as a return, as described in the preceding paragraph. Afterwards it was learned that the intake air in these entries returned to the outside, through Fifteenth and Sixteenth Left butt entries in Section 4 at point *D*. Stoppings in the latter entries had been demolished by the explosion. At the time, however, no one knew exactly what path the air followed.

The explorers went as far as the Thirteenth and Fourteenth Right butt entries from which much carbon monoxide was being discharged. Fresh air was temporarily shut off from these entries by the erection of canvas stoppings. While this work was being executed several men with gas masks began to explore the territory further inby.

At this time, about 11:55 a.m., a second explosion occurred. It was purely an ignition of gas, which manifested sufficient force to knock down the men. Those present state that the greater force was exhibited in the middle or Eighth South face entry, probably due to the fact that the pressure followed the line of least resistance, through a chute or shoofly running from the Fifteenth Right butt to this entry. Four distinct air movements, back and forth, were felt.

This explosion was of little consequence, no doubt, because the first explosion either ignited or carried with it much of the coal dust which had accumulated in its path. It is believed that a dearth of air at the face prevented a serious explosion. Much coked coal dust was lifted and carried by the expanding gases. No flame was observed and no heat or smoke became manifest to the men engaged in the exploration.

Though some of the men were slightly affected by carbon monoxide, none was injured. Still there were a few anxious moments for all of them which was

relieved when it was found that no one had been injured to any material degree. Following this explosion the men retreated to fresh air in the Eleventh and Twelfth Right butt entries, which are, as has been stated, intakes from an auxiliary air shaft. Some of the men then decided to leave the mine.

The rest reasoned that the mine would be safer after an explosion had burned up at least some of the methane, for it might be several hours before the gas would find time to accumulate in dangerous quantity and diffuse to an explosive mixture. Therefore, preliminary steps were taken to seal the area. A brick stopping was erected in each of the three face entries inby of the Fourteenth Right and the Sixteenth Left butt entries, as indicated on the accompanying map. These were completed at about 7 p.m. on the day following the major explosion.

After these seals were erected the next logical step

was to explore and restore ventilation in the workings off the Thirteenth and Fourteenth Right butt entries. As the rescue teams knew definitely that these workings were in the path followed by the flame and main force of the explosion, a careful inspection of this area was made, after which ventilation was restored by the erection of stoppings and line-brattices as shown on the map. These were so placed as to cause fresh air to enter this area at *E* and *F* and to return through the "chutes," or shooflies, *G* and *H* to the Fifteenth and Sixteenth

AFTER the second explosion, in which no one was injured, the rescue men bravely continued their work without intermission, deciding that at no time was it safer to undertake the sealing than immediately after the flame had burned part or all the methane from the fire area. Seals were not broken till oxygen content fell below 4.2 per cent; and before recovery commenced all material had been located at convenient points, doors having been made for use wherever it had been planned to erect them. Air was reversed in the forefront of the fire area so as to take the foul air away from points where rescue squads were working. Rock dust quenched flames wherever they were encountered.

Left butt entries and thus to the return airway in Section 3 of Horning mine. Incidentally, the latter entries served as the return for the air which was conducted by steps to the faces of the three face entries while the latter were being cleared of gas.

Having cleared the workings of the Thirteenth and Fourteenth Left butt entries the workers erected permanent stoppings which later would be needed and yet would not interfere with an already-determined plan for the restoration of ventilation. Included in this work was the erection of an air lock *I* on No. 9 face entry, between the Thirteenth and Fourteenth Right butt entries.

In the meantime a consultation was held, which was attended by representatives of the Pittsburgh Terminal Coal Corporation, the Pennsylvania Department of Mines, the U. S. Bureau of Mines, the Mine Safety Appliance Co., the H. C. Frick Coke Co., and the Bertha Consumers Co. At this consultation, over which J. J. Walsh, secretary of mines for the state of Pennsylvania presided, a plan of procedure detailing definite steps in the work of unsealing and recovery was drawn up and signed, covering, however, only the initial advances and not the complete undertaking.

These men agreed, first of all, that the seal on the Ninth face entry to Section 4 (or for that matter the seals on either of the other two face entries) should not

be disturbed until the oxygen content in the sealed area, as shown by samples analyzed by the U. S. Bureau of Mines, had fallen to approximately 4 per cent.

The steps to be taken as set forth in the agreement were as follows: Step 1—Canvas stoppings Nos. 1, 2 and 3 were to be erected at the points indicated on the map. Step 2—After these were completed fresh air was to be conducted to the crosscut in which No. 3 stopping was erected. Step 3—Matched lumber stop-

Step 4—A matched-lumber stopping was to be constructed. This is indicated on the map as No. 4. (This stopping, however, was not erected as it was not needed.) No. 3 stopping was then to be removed and the initial seal on the Eighth face entry broken, a door being erected on that roadway. Step 5—No. 5 stopping in the Eighth face entry was to be built and then No. 6 stopping on the Seventh face entry, as indicated on the map. Next the doors in the initial stopping or seal in the Seventh face entry were to be opened.

Step 6—No. 7 stopping was to be built of 3-ply canvas in the crosscut between the Eighth and Ninth face entries, and in the Ninth Face entry an air lock was to be constructed similar to that of which No. 2 stopping is a part. The location of this was left to be decided after examination of the ground. (As matters developed, this air lock was located in accord with the specifications of Step 7 which follows.) Step 7 and last—The final air lock in the Ninth Face entry was to be erected at the point indicated by J on the map.

After this plan for opening up the sealed area had been decided, all materials necessary for the work were gathered and such construction jobs, as the making of doors for all locks and air locks, were completed. All these were taken into the mine in readiness for the operations in which they would be utilized. Consequently, at no time were restoration and recovery proceedings delayed for lack of material.

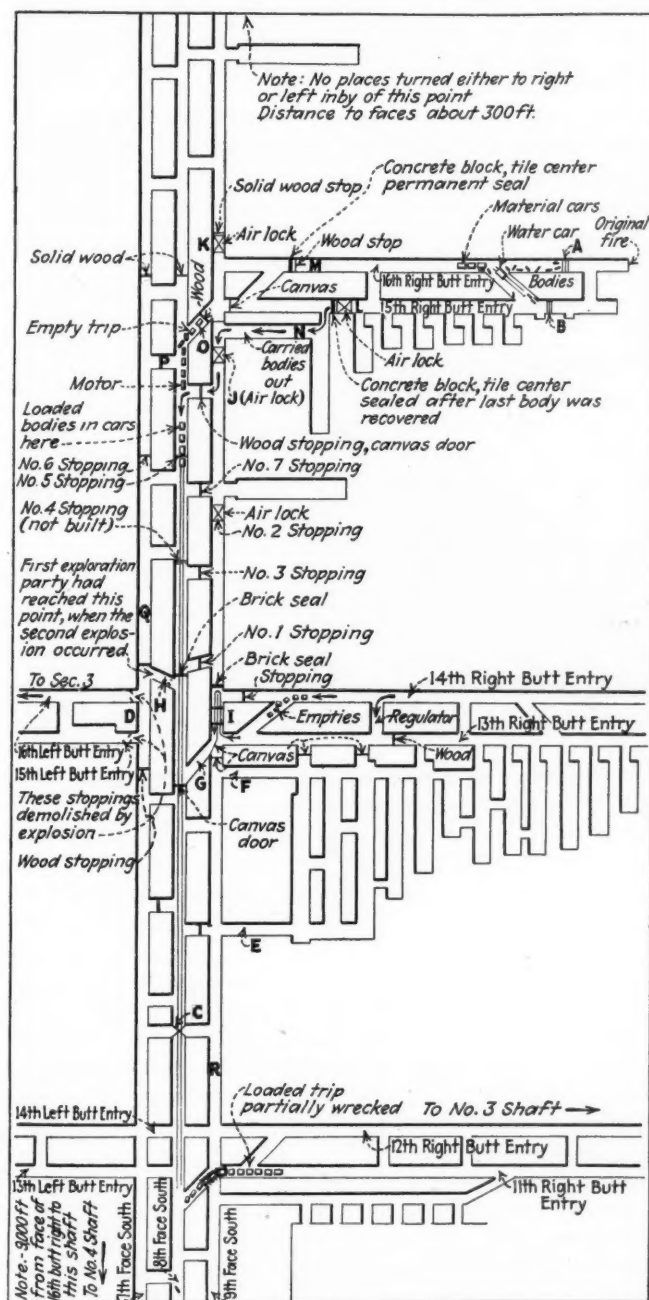
OXYGEN DROPPED TO 4.2 PER CENT

On Feb. 9, at 10:50 p.m. and five days after the initial seals were completed, the oxygen content of the air behind these walls had fallen to 4.2 per cent. A unanimous decision was reached to begin the recovery work in accordance with the plan of procedure already outlined. This plan was followed as far as it went, and then by common consent an additional air lock K was placed slightly inby of the Sixteenth Right butt entry in the Ninth face entry, another air lock L was erected between rooms Nos. 1 and 2 in the Fifteenth Right butt entry and a stopping M was constructed in the Sixteenth Right butt entry slightly inby of the first chute.

On Feb. 13, four days after the first seal was broken ventilation was restored to the last crosscut of the Sixteenth and Fifteenth Right butt entries. Fourteen bodies were recovered on the following day. The other six, which were at more accessible places, had already been found and recovered.

An important decision, reached at the consultation which preceded the main part of the restoration work, was that three men should be authorized to act as leaders, one during each of three shifts. These men were John Berry, of the Bethlehem Mines Corporation; George Riggs, of the Mine Safety Appliance Co. and George S. McCaa of the U. S. Bureau of Mines. Mr. McCaa withdrew from this capacity after several days on account of the death of his mother. His place was taken by George Grooves of the U. S. Bureau of Mines. Each of the three shifts, consisting of four rescue teams and the necessary workers, was accompanied by two state inspectors and two officials of the company or chosen volunteers of official capacity from other companies. These men served as consultants for their respective leaders.

This divergence from common practice in restoration work after an explosion is worthy of adoption where at all feasible. One man is placed in complete charge during each shift and that man leads as well as bosses.



Map Illustrating Moves in Horning Rescue Work

No attempt was made to unseal the headings till the oxygen percentage fell below 4.2 per cent, but as it was feared that a little air might revive hot embers the approach was made with great caution and in accordance with a plan of campaign devised after much deliberation. In the diagram can be seen where the victims were found and where cars were derailed. Some men were killed at places so remote from the fire that the points where they lay do not appear in the map.

pings were to be built at points where canvas stoppings, Nos. 1, 2 and 3 had been located. Doors were to be placed in Stoppings Nos. 2 and 3, also a pipe in No. 2 stopping for the purpose of taking gas samples. An air lock was also to be provided, the door of No. 2 stopping being designated as one of its entrances.

Serious mistakes are apt to be made when supervision is conducted from the surface by a map in the hands of one or more individuals who endeavor to keep in touch with the men underground through a verbal interchange of information. Further, the scheme is of merit because a corps of consultants accompanies the leader to assist him in making decisions. Likewise, the scheme of coming to a definite agreement as to a plan of procedure before commencing operations possesses much merit.

Following is a list of the companies having teams taking part in this work: the Pittsburgh Coal Co., the Buckeye Coal Co., the Bethlehem Mines Corporation, two; the Hillman Coal & Coke Co., two; the H. C. Frick Coke Co., three; the Bertha Consumers Co.; the Vesta Coal Co. and the Inland Collieries Co. The Pittsburgh Terminal Coal Corporation had two teams and the group of companies in the coke region that maintains the Orient rescue station also supplied a team.

After all bodies were removed from the mine, concrete and tile-block stoppings were erected in the Fifteenth and Sixteenth Right butt entries as indicated on the map. These seals were kept in place until the night of March 13 when ventilation was restored in these entries. Meanwhile ventilation was conducted to the faces of the face entries of Section 4, and stoppings, doors and an overcast were erected so as to restore the ventilation in these entries to the same state as before the explosion.

In the restoration of ventilation in the Fifteenth and Sixteenth Right butt entries the air was reversed so as to carry directly into the main return what gas had accumulated in these entries, instead of taking it through other working places in the split. The intake air was conducted from No. 8 face entry through chute *G* to the face entry, thence through the air lock *J* and the passage *N* to the Fifteenth Right butt entry, thence returning through the Sixteenth Right butt entry and chute *O* to the Eighth face entry and through crosscut *P* to the Seventh Face entry which normally serves as an intake inby of overcast *C*, from which point outby it serves normally as a return. At 6:40 p.m. this reversing of the air was completed; at 10:25 ventilation in the two entries was restored. Three apparatus teams assisted by men equipped with gas masks were engaged in the work.

NOT A TRACE OF HEAT OR FIRE

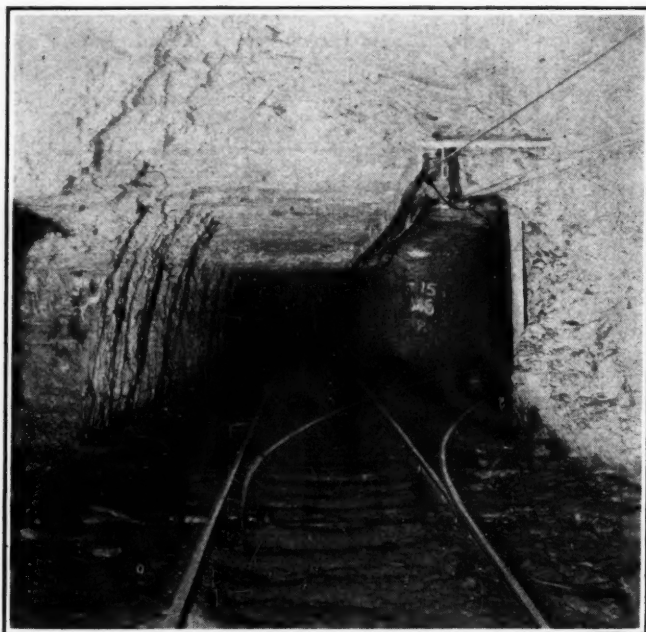
The rescue teams made two inspections of the fire zone. This they entered through a break in the seal in the Fifteenth Right butt entry through the air lock inby of this wall. They found no trace of fire or heat and took temperature readings which indicated a normal thermal condition. Two gas samples also were taken within the zone.

After that, the seal on the Sixteenth Right butt entry was opened by apparatus men and ventilation restored in the entries in steps from one crosscut to the next. The rooms off the Fifteenth Right butt entry were swept free of gas consecutively by line brattices as ventilation was restored in steps to the face.

The Eighth face entry of Section 4 had been rock-dusted from a point within 250 ft. of its face to the hoisting shaft. Except for the 250-ft. interval which had not been rock-dusted, little evidence of flame from the explosion was observed in this entry, for here propagation of the explosion through the ignition of coal dust was absolutely checked by the rock dust. In the Seventh face entry evidence of flame was observed

in an interval between its face and a point marked *Q* on the map. In the Ninth face entry similar evidence was observed in the interval between its face and the point marked *R* on the map. Evidence of coking was observed in all other places inby of the Eleventh and Twelfth Right butt entries, with the exception of the Fifteenth and Sixteenth Left butt entries which were not thus affected.

The main vent of the explosion, as manifested by flame, was in the Ninth face entry, but as seen it stopped short of the Eleventh and Twelfth butt entries, which are main intakes from an auxiliary shaft. What



Rock Dust That Stopped Flame in Horning Mine

This illustration is made from a photograph taken 24 hours before the explosion. It shows a generous application of rock dust on No. 8 face entry in Section 4. The rock dust on this entry no doubt stopped the explosion from going throughout the mine. The turnout on the right leads to the Sixteenth Right butt entry, at the face of which the fire and explosion originated. The distance from the point where the camera stood to this face was 700 ft.

was the cause of its extinction at this point? The most logical assumption is that the explosion lost its force in passing the Thirteenth and Fourteenth Right butt entries, for here it had opportunity to expand. Otherwise, in the fresh air of the Eleventh and Twelfth Right butt entries and the Ninth face entry outby of the latter, the explosion would no doubt have taken on renewed life in the direction of No. 4 shaft. Outby, in the direction of the No. 3 shaft, however, any flame that might have passed up that connecting link would have been smothered and cooled by the rock dust in a barrier 200 ft. long that had been placed between the two mines. Incidentally, the rock dust in the barrier was dislodged by the force of the explosion.

Evidence of force extended along the face entries of Section 4 from their faces to a point about 3,000 ft. outby. Evidence of great force was observed in the workings off the Thirteenth and Fourteenth Right butt entries. Force was also in evidence in the Fifteenth and Sixteenth Left butt entries which lead to the face entries in Section 3. Its manifestations were seen for a distance of about 1,100 ft. in the Eleventh and Twelfth Right butt entries which connect with the adjoining No. 3 mine of this company. No evidence of great force was seen in the Fifteenth and Sixteenth Right butt

entries at the faces of which the explosion originated. A water car and three supply cars on the latter heading were not so much as lifted from the mine track. Many of the victims who met death in this entry were found in natural positions.

The greatest manifestation of force was exhibited in the Ninth face entry. This force swept practically free of debris and dust the interval between the Fifteenth and Eleventh Right butt entries. Several loaded cars in a trip standing on the track which crosses this entry to the Eleventh Right butt entry were wrecked by the explosion, and against these cars was piled all the debris, including that from several permanent stoppings carried by the force of the blast from inby points. These materials formed what might be termed a wall crossing the entry and completely blocking it.

ROCK DUST FROM ONE ENTRY AIDS ANOTHER

Rock dust in the Eighth face entry, coupled with room for quick expansion afforded by the Fifteenth and Sixteenth Left butt entries which join with Section 3, is believed to have confined the explosion to the limits already outlined. Open crosscuts between the Seventh and Eighth face entries inby of the overcast at C no doubt caused the rock dust strewn on the latter entry to be more or less effective on the former as well.

Aside from the constructive hints already drawn from the Horning explosion the following are suggested: Mines should be equipped with fire-fighting apparatus, some of which should be large and mounted on trucks and some lighter and capable of being carried. Boxes of rock dust might well be located at strategic points to assist in fighting a fire.

Fire seals should be erected with the utmost speed. Though every available agency was pressed into service to expedite the building of fire seals prior to the explosion in the Horning mine, the rate of erection did not match the speed with which an explosive mixture was developed within the zone.

Wherever possible, flame might, with advantage, be kept alive at the face or faces within the zone of a fire until the seals have neared completion. This would prevent an accumulation of gas, because

whatever methane is liberated would be burned in that event as fast as it was liberated. Until the walls had been erected almost to the roof, sufficient air would have had to be introduced to the zone behind temporary brattices to support combustion.

Fire seals should be constructed of comparatively soft tile; at least the core of these structures should be thus constructed. That this would be good practice was demonstrated by the time lost and the labor expended in battering down several of the seals constructed of brick and concrete-block in this mine.

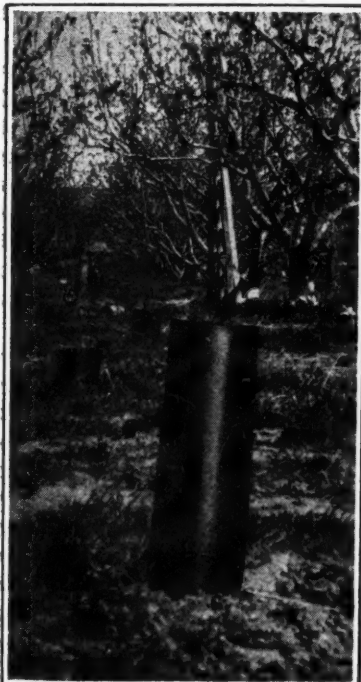
Briquets of Coal Cut into Fuel Oil's Orchard-Heating Business

By degrees coal and its byproducts are invading the realm of fuel oil. The latest invasion by coal of the sacred precincts of oil is the adoption of briquets for grove heating in the citrus belt of California.

The first heating of orchards with briquets was done successfully in the Wenatchee and Okanogan districts of eastern Washington, where apple growers of the "Inland Empire" learned that a certain amount of heating during the burgeoning of the apple trees in the spring protected them from the destructive frosts. Fuel oil was tried without success. A carload of briquets was sent to the district by the Pacific Coast Coal Co. and used with remarkable results.

Inspired by the success of briquet heating in the apple growing districts, the coal company shipped briquets to the citrus belt of Southern California. For years the oil-burning smudge-pot has been used by orange and lemon growers of California. Citrus fruits cannot stand a sudden drop in temperature and it is necessary—usually at great expense—to maintain fires in the groves during every cold spell throughout the winter. This overhead expense has been a contributing factor to the high cost of good citrus fruits.

The first use of briquets in the citrus groves was a complete success. Growers found that the clean burning, smokeless briquets did away with the main objections of fuel oil heating—complete elimination of smoke and noxious gases.



Coal Enters the Orchard

Once oil smudges exclusively were used to keep the frost from doing untold damage to budding citrus fruit crops in California and to the apple crops of Oregon and Washington. But the smudges turned whole counties black—even stopping moving picture production by hazing the atmosphere. Today Washington coal briquets are entering the orchards. In "stoves" that cost about one dollar each, briquets make clean heat and also require less attention.

**Village of the
Consolidation Coal
Elkhorn Division,
Dunham, Ky.**

West Virginia has not so completely denuded its hills as the State of Pennsylvania, where fire has removed what the axe has left and re-burned the saplings seeking to establish themselves.



**Shall Fire Denude
or Trees Bedeck
Hills Around
Coal Operations?**

Many mining companies have large acreages of idle land that, if not allowed to burn over, or if burned are then re-wooded and watched, will give big returns on the labor expended on them.

Many Coal Companies Plant Forests to Provide Timbers for Use in Their Mines

**Protection From Fire Highly Important — Natural Reseeding Adequate
with Some Species—Fruit Trees Thrive on Stripped Ground—Thinning
of Second Growth a Mean of Assuring Rapid Renewal of Old Forests**

By Newell G. Alford

Consulting Engineer, Howard N. Eavenson & Associates,
Pittsburgh, Pa.

WHAT IS BEING done to provide the mines with timber when the shortage becomes acute? Do the coal companies sense the difficulties they will face if they have made no provision for the future? In reply to these questions it may be safely said that the coal companies have been showing an unadvertised and progressively active interest in the forecasted shortage. The work of protection and reforestation is hardly broad enough as yet to be classed as general but a sufficiently serious endeavor has been manifested by both large and small operators to indicate the approach of a general and well-organized movement to meet the future timber requirements of the coal industry.

The U. S. Forest Service and the various state foresters are eager to serve the mining companies either with actual planting or helpful plans, and the coal companies will probably organize either by districts or states for the purpose of getting as much of this material assistance as they can.

The work of the coal companies differs and varies to include one or all of the following: (1) Protection by means of fire patrols, (2) Removal of dead undergrowth, (3) Proper thinning of young second growth, (4) Cutting of mature or diseased trees in the older growth, (5) Fostering of natural reforestation, (6) Artificial setting, and (7) Nursery planting and cultivation.

Of the states that are helping coal companies in their reforestation work, Pennsylvania, so far as is known,

is doing much more toward providing for future supplies than any of the others. In Pennsylvania this work is by no means confined to the large producers, but most of the development so far accomplished has been done on the larger properties. Among the companies at present doing the most extensive work are: The Allegheny River Mining Co., the Berwind-White Coal Mining Co., the Bethlehem Mines Corporation, the Clearfield Bituminous Coal Corporation, the Rock Hill Coal & Iron Co. and the Wilmore Coal Co.

In the anthracite districts seven or more firms have a definite plan for retimbering their tracts of land. So far as is known, the most extensive work in this direction is being done by the Philadelphia & Reading Coal & Iron Co. In the fall of 1920 this firm organized a forestry bureau and now maintains a field force of fifteen foresters and rangers with thirty woodsmen as assistants. These men have opened and now maintain nearly 400 miles of roads and trails to make the forests more accessible for fire protection.

This company to date has planted 918,000 forest trees and expects to add about 225,000 more in the spring of 1926. The trees planted have been exclusively two-year old seedlings and largely of the pitch, jack, red and Scotch pine species. Though the planting has been extensive, the principal work of this forest bureau has been and is fire protection. An idea of the necessity of such protection may be gathered from the fact that 831 fires were fought on this company's property within the last four years, the area burned over by them aggregating nearly 50,000 acres.

This forestry bureau is self-supporting, in that it

From a paper entitled "Reforestation Progress by Coal Mining Companies" presented before the Coal Mining Institute of America, Pittsburgh, Pa., Dec. 9, 1925.

supplies to the company an average of about 1,500 carloads of timber per annum. The trees cut are largely matured, the dead and defective timber being used mostly for mine lagging and props. Experience in this district shows that the cost for protection and development in a case like this is from 30 to 40c. per acre per year. This company employs a forester with unusual training and experience, and it is his thought that, where more than 25,000 acres of land are involved, the practice and technical nature of such work thoroughly justifies the services of a specialist.

On the authority of the U. S. Bureau of Mines, it may be stated that about nine board feet of timber is used in the anthracite districts per ton of coal mined. Furthermore, this consumption has practically doubled within the past eighteen years, and the unit price has quadrupled.

Over one million trees were planted with state aid in the spring of 1925. Probably the Wilmore Coal Co. is the leading firm in the scale of its reforestation. It has so far planted over 400,000 seedlings. These have shown excellent progress. For the last two years it has obtained two-year old seedlings from the State Forestry Department. These were mostly short-leaf, Scotch, pitch and red pine, Japanese and European larch. Next year this company expects to continue with white pine and as much white ash as it can obtain.

HAS ITS OWN NURSERY

Because it is believed that the ability of the state to distribute young trees will be taxed by heavy demands next year, this company is now preparing its own nursery so that eventually its forestry organization will supply all the seedlings it needs. It is expected that, in possibly fifteen or twenty-five years, mine props will be cut from present plantings.

So far the Wilmore Coal Co. has not attempted the planting of hardwoods as it believes that these varieties come from seed latent in the soil. It found in one case that a fine stand of white oak sprang up after pine had been cut off, indicating that the seed had been dormant in the soil for years.

The Bethlehem Mines Corporation began planting seedlings from the State Forestry Department in 1919, and to date has set out nearly 300,000 trees of this type. The experience of this company has been confined to the red, pitch and jack pines, which have proved to be rapid growers with ability to make a good growth on very indifferent soil. Pitch pine planted on one tract in 1919 has now attained a height of 15 ft. and a diameter of 5 in. at a point one foot from the ground. The other species have done almost equally well. Another phase of the work provides for the cutting out of dead chestnut and timber damaged by fire or disease. This cutting is under the supervision of a graduate forester who marks the trees which should be cut down and removed.

FAVORS CONSERVATION

During the last three years the Rochester & Pittsburgh Coal & Iron Co. has planted 500,000 trees in barren places. This organization believes in the conservation rather than in the planting of hardwoods. It utilizes hardwood trees down to the small limbs which are turned into sprags, with a consequent minimum of waste. Cut-over areas are allowed to develop a second growth of hardwood. The experience of this company so far has been highly gratifying.



Fig. 1—Fruit Trees Will Grow in Strippings Waste

Several thousand fruit trees have been planted in Indiana on such overturned areas as this, with results which surpassed those derived from orchards on solid ground. Here is a constructive measure which should not be overlooked.

In Ohio, the Carbondale Coal Co. began reforestation of waste land in 1906, and each year since has planted an average of 10,000 seedlings of the pine species. It has lately transplanted trees having a diameter of as much as 12 in., one foot from the ground, and over 30 ft. in height. Based on the density of tree growth in that section, this company has found that in general it takes three acres of timber for the mining of one acre of coal.

Three other concerns in the Ohio coal fields have been following a definite plan of reforestation under the guidance of the state forester at Wooster. Though these coal companies are not doing work comparable in scale with those in Pennsylvania, there are now ten reasonably large producers in Ohio who contemplate the starting of a definite program in timber work in 1926.

There is still a large quantity of timber suitable for mine props in the southern portions of Illinois and Indiana with a large available supply coming from Missouri and Kentucky. With the curtailment of this supply in sight, several of the larger coal companies in Illinois have begun conservation work. This consists of protecting standing timber against fire by means of guards and patrols, also stimulating natural production of standing trees by thinning stands of young second growth that are too thick. This constitutes a



Fig. 2—Wooded Hills in Central Pennsylvania

Here is a mine, as indicated by the tracks on the clearing in the lower right-hand corner—and here also are newly grown trees. At present the mine at this place supplies itself with low-cost timber from nearby hills but in the future it will have to import timbers from distant points at a high cost unless it has foresight enough to conserve its timber resources.

large part of the present standing timber. They are also cutting such trees as have reached maturity in the older stands.

One of the three largest coal producers in Illinois has outlined a plan for reforesting land that involves the replanting of a definite acreage as wooded areas are cut off. This company has cleared land unsuited for farming use, and says that the success of its program depends largely on its ability to protect its present standing trees.

In southern Illinois large quantities of timber could be grown on worthless vacant land that is good for nothing else. If the state had a more liberal taxation policy for reforested areas, retimbering doubtless would be promptly and actively started in the southern portion of the state. Seventy-six per cent of the total area of Illinois is farm land, the rest of the land being occupied by cities, wastes, forests and unimproved pasture. Much the larger portion of the cultivated land lies in the central and northern part of the state. The Illinois Division of Natural History Survey estimates that the maximum area that could be used for forest production is probably not over 5,000,000 acres, and that it would take the state 100 years or more to produce enough timber to take care of its needs.

THIS COMPANY USES SEEDLINGS

One of the earliest pioneers in forest protection and the cultivation of timber was the St. Bernard Mining Co. in western Kentucky. This company was recently sold to the West Kentucky Coal Co. In 1890 it began the planting of seedlings on waste and vacant land from its own arboretum, and in 1920 it had the following quantity of timber from artificial reforestation on several tracts embracing 550 acres in all:

Table I—Reforestation Timber on Property of West Kentucky Coal Co.

Number of Trees	Kind of Timber	Range in Diameter One Ft. above Ground
1,310,000	Black walnut	4 to 16 in.
230,000	Catalpa	5 to 10 in.
400,000	Black locust	3 to 10 in.
30,000	Tulip (poplar)	5 to 15 in.
1,970,000 trees		3 to 16 in.

In addition the St. Bernard Mining Co. in 1920 had approximately 30,000,000 board feet of natural growth on the stump on 10,000 acres of land of 12 in. diameter

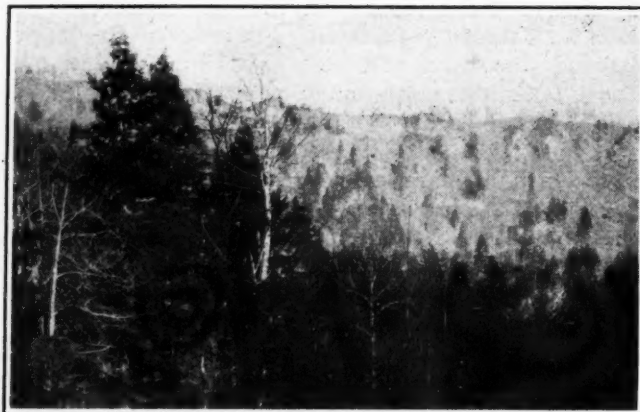


Fig. 4—A View Typical of the Pennsylvania Terrain

No attempt has been made apparently to thin out the second growth, nor has any effort been made to replant the land where no trees are growing. Future generations will be lamenting the fact that the present operators failed to note the marvelous possibilities of the idle land lying above their coal mines.

and over, made up as follows: 20,000,000 ft. of oak, 1,000,000 ft. of hickory, 4,000,000 ft. of gum and 5,000,000 ft. of poplar.

A few other concerns in western Kentucky have been interested in this work. The W. G. Duncan Coal Co. has planted about 10,000 catalpa trees with satisfactory results, and has found that a natural growth of walnut trees can be started by scattering the seeds through old fields. In this section one of the greatest factors in reforestation has been the recent passing of a stock law covering Muhlenberg County, which it is expected will have a notable effect on young growth.

In this part of Kentucky old fields are showing a satisfactory second growth, although this is not usually of the most desirable species. Sweet gum, hickory and sycamore are predominating in these areas. In West Virginia, where the largest coal producers are interested in forestry, activities have been confined largely to systematic fire protection.

PROTECTION AGAINST FIRE ONLY

In Virginia, the Clinchfield Coal Corporation and the Virginia Coal & Iron Co. are likewise engaged in protective work. In the Alabama coal fields where mine timber is now none too plentiful, several of the large producers are similarly following a systematic plan for



Fig. 3—An Area Greatly in Need of Thinning and Protection Against Fire

A fire started in this growth would annul years of patient effort of Nature to restore the destructive work of the lumberman. The danger could be largely avoided by removing the underbrush, thinning out the trees and maintaining fire patrols. Hilly ground, though frequently farmed, would be better reserved for the growth of timber. A farm on rough ground rarely affords the farmer any more than a bare subsistence. Plowing rapidly denudes the humus that the old tree growth has created.

protecting the timber from fire. In certain sections fire guards are cleared of all growth and burned over annually.

It is interesting that in Colorado an investigation has shown that to a large extent natural reforestation will

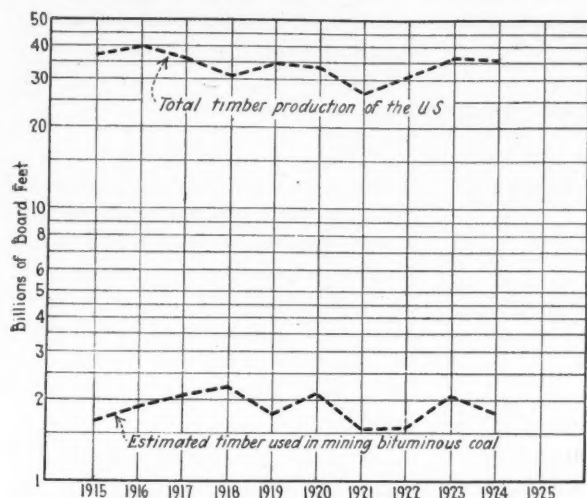


Fig. 5—Timber Used by Mines and for All Purposes

Fortunately for our future, the timber use in the United States is stationary year by year. Economies are preventing the upward swing in the curve of production as they have in coal, but fortunately for the timber industry the price changes leave the industry quite serene.

take care of itself. The Colorado Fuel & Iron Co. has found that by not cutting trees on the ridges and leaving a sufficient number below, second growth is coming on in sufficient quantity to provide for future needs.

Contrary to the common belief when coal stripping

Table II—Timber Cut in the United States for All Purposes

1915-1924			
	Board Feet		Board Feet
1915	37,011,656,000	1920	33,798,800,000
1916	39,807,251,000	1921	26,960,864,000
1917	35,831,239,000	1922	31,568,688,000
1918	31,890,494,000	1923	37,165,505,000
1919	34,552,076,000	1924	35,930,986,000

Supplied by the "American Lumberman"

Table III—Consumption in 1924 and Expected Requirements of Timber Used in Bituminous-Coal Mining

Year	Board Feet	Year	Board Feet
1924	1,788,200,000	1929	2,312,000,000
1925	2,146,000,000	1930	2,405,000,000
1926	2,176,000,000	1931	2,479,000,000
1927	2,213,000,000	1932	2,553,000,000
1928	2,264,000,000	1933	2,627,000,000

became prevalent, the waste lands from this method of mining are found to be excellently adapted to the growing of trees. This has been demonstrated in Penn-

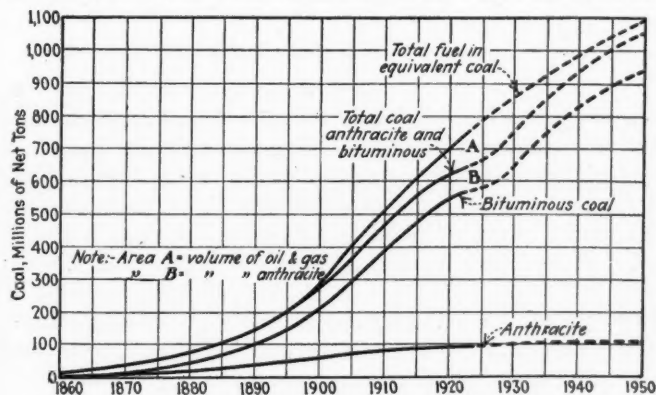


Fig. 6—Past and Future Fuel Production in the United States

The fuel requirements are expected, despite economies, to advance steadily but the part of coal in this fuel output has temporarily been reduced by oil. In time, however, coal will probably recover the business lost to oil as is shown in the chart by the upward bend of the coal curves.

sylvania. On certain overturned areas in Indiana several thousand fruit trees have been planted, with the highly surprising result that these trees are showing a much better performance than any neighboring orchards.

Generally, "the fundamental problem is to increase the production of timber by stopping forest devastation. About one-half of the timber left is in three Pacific coast states and over 61 per cent is west of the Great Plains. The annual new growth of timber is only one-fourth of the yearly consumption. The present cut of lumber in Pennsylvania is less than the City of Pittsburgh alone demands. The production of yellow pine is declining and within ten years will probably not exceed the requirements of the southern states themselves. Practically as much timber is destroyed annually in the United States as is produced for all uses."

MINING USES THREE BILLION FEET

If the coal industry as a unit will actively join the growing movement for conserving our wood resources, the taxing of embryo forests by states can be supplanted with legislation that in time will rewood much of the vacant space suitable only to the growth of trees. Practically 3,046,000,000 board feet of timber

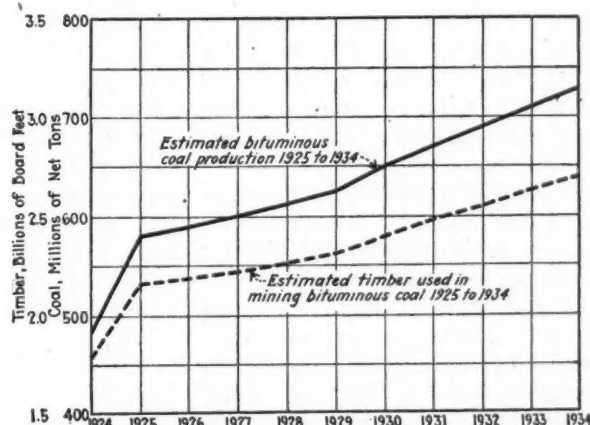


Fig. 7—Bituminous Coal Production and the Timber That Will Be Needed

Evidently the assumption is made that the need for timber will not be reduced by the introduction of steel, concrete or other substitutes or by economy in the use and reuse of lumber or by its extension in life by preservation.

are used annually in American mining, and approximately 60 per cent of this quantity is consumed in producing bituminous coal.

Fig. 5 shows that the quantity of timber cut yearly in the United States from 1915 to 1924 for all purposes has been nearly uniform and that the demands of the bituminous coal mines during the same period were also fairly constant. The reported total annual timber production for this period is given in Table II.

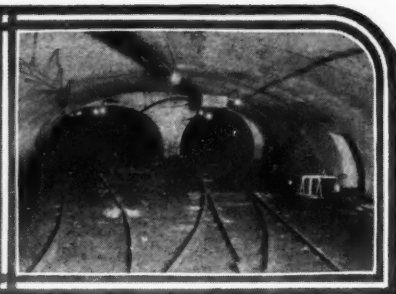
Fig. 6 shows the past and expected future production of bituminous coal. This is not submitted as a prophecy, but is based on the best data obtainable at this time.

Based on the expected future bituminous coal production shown in Fig. 6 and using the estimated unit of 3.71 board feet of timber per ton of bituminous coal mined, Fig. 7 shows the expected increase in the use of timber for soft-coal mining. It is expected that the true average timber consumption per ton of coal will be slightly higher rather than under this weighted average. The values as determined in Fig. 7 are shown in Table III. All of these figures are based on data obtained from the best sources now available.

*U. S. Forest Service Report, "Timber Depletion," 1920.



Underground Operation



Discuss Turret Cuts and Vertical Shears At Pittsburgh Meeting

In Thick Coal Longwall Fails and Why?—Cutting Wide Face with Arc Kerfs—Shearing Without Horizontal Cuts — Are Better Bits Needed?

At the bimonthly meeting of the mining section of the Engineers' Society of Western Pennsylvania, held in Pittsburgh on March 30, a paper on "Various Methods of Cutting Coal" was presented by W. R. Jarvis, Pittsburgh district manager of the Sullivan Machinery Co. As this paper dealt largely with methods of cutting as applied to new systems of mining, longwall was a topic in the discussion which followed. As one of the men expressed his impression of the meeting: "It gave the members an opportunity of kicking the old dog, *longwall*, around again."

Henry J. Lewis, consulting engineer of Pittsburgh, opened a discussion on longwall mining. Successful longwall operations, by and large, have always been in thin coal. People who try longwall in thick coal generally go back to room-and-pillar mining. Longwall in thick seams fails because the roof is too completely destroyed. Instead of bending, as it would in the mining of thin coal, it shears.

FAILS FOR LACK OF PACKING

L. D. Tracy, mining engineer, U. S. Bureau of Mines, Urbana, Ill., attributed failures of longwall in thick seams to a dearth of waste material for the building of pack walls. He knew of a longwall failure in thick coal at an English mine, though it is in Great Britain that longwall is best understood. This failure was caused by the lack of materials for the building of pack walls. He did not see how longwall could be worked successfully without pack walls.

E. H. Coxe asked Mr. Jarvis how a 30-ft. room could be cut with a machine which operates from a position on the mine track. Mr. Jarvis said

that to undermine a place of that width two separate cuts must be made. In reply to further questioning, Mr. Jarvis added that a pivotal, curved cut, 20-ft. wide, will not shoot as well as one which is 15 ft. wide because the depth of the kerf diminishes from the center toward either rib. Mr. Jarvis denied that he had in his paper advocated the use of 16-lb. rails for track-mounted cutting machines. He emphasized the need for heavy rails securely anchored, for this purpose and placed the minimum limit of rail weight at 16 lb. A heavier rail than this he declared would give much better results.

ANGULAR FACE SUGGESTED

Graham Bright asked if a wide place could be cut by a track-mounted machine by swinging a track parallel to an angular face. Mr. Jarvis said that this is being done with some degree of satisfaction in several West Virginia mines. Mr. Coxe believes that even though advantage be taken of cleavage planes in driving these rooms much difficulty would be experienced in breaking out the coal in the acute-angled corner. Mr. Jarvis said that both the obtuse and the acute corners would have to be more or less rounded.

Edward Steidle asked if anyone by shearing had managed to eliminate the use of shots, to which question Mr. Jarvis replied by saying that though shearing had not totally eliminated shooting it had reduced the use of explosives and had made it possible to produce better coal. As to its applicability to the mining of coal on a long face, Mr. Jarvis said that no long-face shearing machine has yet been developed and doubted whether if it were it would be of any advantage. W. W. MacFarren said

that a shearing bar might be mounted on a loading machine which would operate in a position parallel to the face. If the shearing cuts were shallow enough a hydraulic jack might be utilized for breaking out the coal, thus eliminating shooting. The face would have to be undercut first.

HORIZONTAL CUT OBLIGATORY

Mr. MacFarren inquired whether shearing without horizontal cutting had been tried and with what success, but Mr. Jarvis questioned whether it would give satisfaction under any condition. The scheme was tried in narrow work in a mine of the Vesta Coal Co., at California, Pa., working the Pittsburgh seam, but the attempt failed. Mr. Lewis remarked that shearing does not relieve weight and so free the coal, which is the main object of undercutting.

"Have cutter bits of alloy steel met with much success?" asked Mr. MacFarren. Mr. Jarvis sees no advantage at present in the use of higher grades of steel for cutter bits chiefly because they are handled with so little care that many are lost, but also because of the manner in which they are forged. No doubt a high-grade bit steel would be of great advantage providing means were made available at the mines for forging the steel in a more scientific manner.

BETTER BITS AND BATTERIES

Graham Bright declared that in his belief the storage-battery cutting machine will demonstrate the advantage of better steel bits. The Consolidation Coal Co. has discovered in the operation of storage-battery cutters that in cutting a place a dull bit will consume about twice as much power as one that is sharp. Machines of this type in the Consolidation mines are cutting regularly 18 to 30 places per shift, a record that could not be achieved if dull and inferior bits were employed in the cutter chains.

Why Not Make More Lump?

It is indeed surprising that such a small proportion of the coal operators of the United States give little or no effective attention to an essential phase of the coal business, namely, increased lump-coal production. If a company employs a competent man to supervise the shooting of coal, the output of lump can be increased from 5 to 10 per cent. If, for illustration, a mine has a capacity of 2,500 tons per day, and the lump coal is increased 7 per cent, that would mean 175 tons increased lump coal for the market. Let us suppose the market price is \$1.25 per ton more for lump than for slack. This would mean a net gain for the operator of \$218.75 per day or \$4,375 for each month of 20 working days.

If the company has six mines situated so that a supervisor could manage them all, figuring on the same basis as before, it will be clear that the operator would make \$26,250 per month. The cost of haulage would be decreased as the loader could crib his cars and thereby load more coal for any given quantity of haulage equipment.

SHOOTING AND CLEAN COAL

A cleaner grade of coal can be loaded if the coal is properly shot as the bone or other impurities will not be shattered and mixed with the coal. If the company does the shooting, the powder expense will be decreased. Last but by no means least the safety of the men and property is enhanced materially and the danger of explosions is greatly diminished by the proper placing, charging, and tamping of holes. No doubt the reason so little interest is taken in this phase of the business is due to mistakes of the foreman or superintendent in selecting men to supervise this part of the work.

Frequently, in my observation, superintendents have selected men to supervise the shooting of coal simply because they had given good results in the physical performance of that particular class of work. However, a good coal shooter may be a failure at supervising and demonstrating. To give results as a supervisor, it is absolutely essential that the man have knowledge of explosives, practical experience in shooting coal, executive ability and the power to handle and control men. A man who has had experience managing mines would make an ideal man as supervisor of shooting, provided

he has given explosives and increased lump-coal production study and thought.

No doubt Congress will in the near future enact laws relative to the conservation of lump coal, thereby eliminating much needless waste.

THOS. F. HOYE.

Huntington, W. Va.

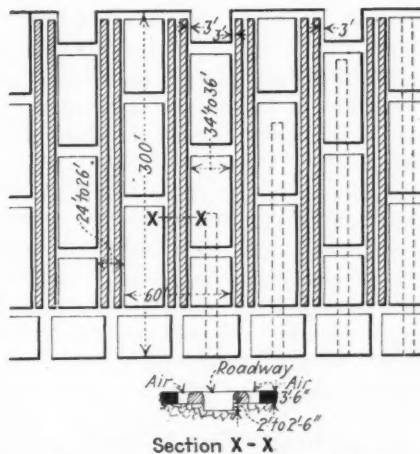
Double Chambers Best Suit Thin Anthracite

Now that the thick beds in some parts of the anthracite fields have been mined, it behooves the engineers to study the problem of mining the thinner seams, which in places have not as yet been touched.

In mining beds of 3 ft. 6 in. and over, the chamber-and-pillar method of mining has been adopted and proved successful, both in first mining and later in the second mining by means of which the pillars were recovered, but in the mining of the smaller beds this method, although applicable to first mining, is apt to prove too costly during second mining.

At present, where the smaller beds are being mined by the chamber-and-pillar method, the general practice is to drive the chambers on 60-ft. centers with a working face 24 to 26 ft. wide, leaving a 34- to 36-ft. pillar between each chamber.

In a bed 3½ ft. thick a miner removes from 24 to 30 in. of rock, 10 ft. wide, in order to make height for his roadway and for the laying of the car tracks. With this rock he fills the gob. The wall of rock formed between the gob and pillar on one side of his chamber creates an air-course 3 ft. wide for ventilating the



Putting Road on Room Center

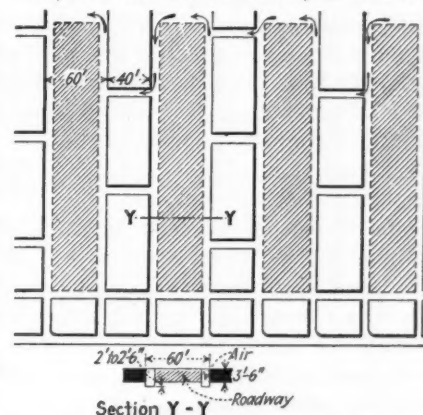
The rock is gobbed on both right and left and therefore with minimum labor but, when an attempt is made to recover the pillar, it must be split or slabbed. But pressure may have rendered these methods impossible. If the room is reopened half the stowed rock must be hauled away—an impossible proposition.

working face. Sometimes the miner has more rock than he can pack into the gobs, and he has to load some of it into cars, which are sent to the rock dump to be unloaded.

When the time comes to recover the pillars in these small beds, the track will be laid either in the old roadway, or in a narrow heading bisecting the pillar.

If the track is laid in the old roadway it means that 50 per cent of the rock which was packed in these chambers during first mining must be moved to enable the miners to get at the coal. This will prove an expensive item.

If, on the other hand, a narrow



Use Wide Room with Two Roads

With this method, if the room will stand driving at such great width, it is easy to get at the pillars to draw them. If they are to stand long they should be packed tight.

heading is driven through the length of the pillar, all the rock which will be cut for the roadway must be loaded into cars and sent out to be unloaded.

To eliminate this expense during the recovering of pillars, why not adopt the double-chamber method of mining in these small beds, as follows: The working faces of each double chamber to be 60 ft. wide, pillars between each double chamber to be 40 ft. wide; chamber lines to be set on 50-ft. centers, sights being kept 5 ft. from one rib; the roadways to be carried alongside the pillar, and all rock to be packed in the space between the two roadways.

The advantages of this method applied to the mining of the smaller beds would be: (1) All rock produced in the chambers during the first mining could be stowed away between the two roadways, forming a substantial pillar for supporting the roof. (2) When recovering the pillars in second mining, the tracks being laid on both sides of the pillar, there would be no rock gobs to handle, thereby reducing the cost of production.

AUBREY DAVIES

Edwardsville, Pa.

Viewpoints of Our Readers

Harworth Hoist Well Designed to Meet Abnormal Depth of Shaft

With Skips or Large Cars Size of Equipment Could Be Reduced—Far Superior to Old Steam Hoist—Might Accelerate More Rapidly, Thus Decreasing Second Peak

By Graham Bright

Consulting Engineer, Howard N. Eavenson & Associates, Pittsburgh, Pa.

The two large hoists, illustrated and described in the April 1 issue of *Coal Age* and now being installed at the Harworth Colliery, near Sheffield, England, are splendid examples of the progress in design and construction of mining equipment being made by British engineers.

The hoisting problems in the coal mines of the United States are quite different from those in England and on the Continent, in that our coal seams lie much nearer the surface, and that depths of 3,000 ft. are found only at metal mines.

The first impression that an American engineer receives upon reading the description of the Harworth hoists is that there is a large amount of hoist for the output. This is, no doubt, due to the fact that skip hoisting is not allowed in the coal mines of England, and British conservatism will not permit the use of a mine car of sufficient size to afford maximum economy in the operation of a coal plant.

COULD SAVE A HOIST

With skip hoisting, the same quantity of coal could be hoisted with a much smaller drum and cable, or with the same drum and the same cable the entire output of both shafts could be hoisted from either one of them. The power equipment necessary to drive the hoist would, of course, be roughly in proportion to the quantity of coal raised in a given time. By the use of larger cars, the cage and empty-car weight would be less, which would reduce the drum and rope size and, at the same time, simplify the decking arrangements.

The steam-turbine driven flywheel set is cleverly planned and is certainly a great improvement over the usual steam hoist with its great fluctuation in steam demand and with its unfortunate inability to use

modern high pressures and superheated steam.

The use of a steam turbine for each flywheel set and a third turbine to drive a generator for the other mine load is an economical arrangement both from a first-cost and operating standpoint. From a standpoint of continuity of operation, the alternate scheme of installing two or more turbo-generators all alike and driving the flywheel sets by induction motors would receive, and no doubt did receive, careful consideration.

ALL-ELECTRIC BETTER

With the scheme as installed, a breakdown of either flywheel turbine would close down one hoisting shaft, whereas a breakdown of the turbo-generator would shut down all productive operation. With all developed power electric, a breakdown of any turbine would not affect operations, for one spare turbine would be available. With the all-electric scheme, an emergency connection could be put in from a central-station system, in which case a spare turbo-generator would not be necessary. Central-station power could be relied upon not to fail at the same moment as the power generated at the station.

The use of two hoist motors and two generators instead of one motor and one generator is largely a matter of available equipment. In general, single machines from an economical and operating standpoint prove better suited to hoist motor capacities up to 2,000 hp.

EDDY-CURRENT BRAKE

The eddy-current brake necessary with the turbine-driven flywheel set is not necessary with the motor-driven flywheel as the induction motor will act as a generator and will

pass the excess power on to the power system when lowering unbalanced loads.

From the hoist duty cycle shown, a reduction in rope speed of about 12 per cent could be obtained by shortening the accelerating and retarding periods from 16 sec. to about 10 sec. This would, of course, increase the accelerating peak and reduce the secondary peak, which, in many cases, is desirable. The reduction in rope speed would increase the safety of operation and would slightly decrease the heating of the equipment.

FLYWHEEL INADEQUATE

The flywheel seems to be a little light for complete equalization of the load with the reduction in speed as shown on the duty-cycle curve. Complete equalization is not necessary, of course, in many cases, but the prime mover must be able to take care of peak loads greater than the average if the flywheel is not heavy enough for complete equalization.

For many years cams, shafts and safety links have been used on control systems in England and on the Continent, but this practice has largely been discontinued in this country in favor of accelerating and retarding relays, geared limit and hatchway limit switches.

This latter control system will give full safety under all conditions, will allow the operative much more latitude and ease in handling the control lever and will more completely safeguard the motors and generating equipment against overloads caused by the careless handling of the control lever.

PROTECTION AT LANDINGS ONLY

With the cam-and-lever system, only at the end of the cage travel is there protection of the equipment against a careless movement of the control handle that would give excessive rates of acceleration or retardation. The large hoist of the Chicago, Wilmington & Franklin Coal Co., at West Frankfort, Ill., is an exhibit of the manner in which full automatic control can be attained with full safety features without the use of the cam system.

British engineers are to be congratulated on the splendid hoisting system being installed at Harworth. After all is said, only the failure to use skips differentiates this hoist, except in detail, from those commonly installed at American mines.

Splint Resultants Drive Out Mine Run of Softer Coals

Perhaps there are few who realize the changes in the market which are modifying conditions in the southern West Virginia field. For more than a year the gas-coal mines have seen their market almost ruined by the splint-coal mines which sell, in competition with gas mine run, the product left after abstracting the lump. The gas coal is a little better for steaming than this splint "resultant," but the price which the former commands is not enough to pay for mining it. All around the region the "soft-coal" mines have been closed down, and the splint-coal mines have been developed. As these latter are becoming capable of meeting the demand, it seems likely that the gas-coal mines will not be reopened.

SPLINTS AND GAS BEDS

It should, perhaps, be said here that the high-volatile coal in southern West Virginia may be divided into splints and gas, or "hard" and "soft" coals, as they are termed locally. The splints come from the following beds: Coalburg, Wini-frede, Block Five, and Lewiston. The gas-coal beds are: Eagle, Powellton, No. 2 Gas, and Cedar Grove. The last of these is sometimes classified as a splint, and in the western part of the Kanawha field and over on Island Creek the No. 2 Gas is so hard that it also is thus classified.

All the hard coals are screened, and the lump sold for domestic fuel; what remains goes as nut and slack. Island Creek has built up a large business by passing the coal over 6- or 8-in. screens, getting a fancy price for the block and a price for the coarse resultant somewhat lower than the regular mine-run price.

One company has confined its output to six splint mines and three gas mines, shutting down ten that were mining gas coal. Two more may have to be shut down. The tonnage, however, at the few mines still working has been maintained, and the company mentioned produced more coal last year from the nine mines than in any year since 1915.

Railroads that used to buy gas mine run have gone to splint mine run and resultants, so that over half of the rich steam coal acreage in the high-volatile districts is worthless as an investment.

Twenty odd years ago, when an anthracite strike of any duration

occurred, there was a corresponding coal boom in West Virginia, but the recent strike had no effect that could be noticed, certainly not enough to afford a profitable business. If West Virginia, with the 1917 scale, with the anthracite strike in full swing and with the mines in other states trying to work on the Jacksonville scale, cannot make a decent profit, what will happen now that the strike is settled if the Jacksonville scale should be annulled?

WEST VIRGINIAN.

Defends Cast-Iron Wheels For Mine Cars

I read with interest an editorial on page 254 of Feb. 18 issue of *Coal Age*, under the heading: "Lighter Wheels and Heavier Loads." It seems to me some one has given you some wrong information concerning car wheels for mine car use.

My company has been manufacturing mine car wheels as a specialty for over forty-five years and we have watched carefully the development of the mine car wheel business in the United States. We have investigated personally the mine car wheels used in foreign countries—England, France, Germany and also Canada—which use some steel wheels on account of the high duty of importing American material.

The foreign countries generally have cars that carry maximum loads of from one to one and one-half tons while American cars today average a minimum of two and one-half tons and we are now building a large percentage of our cars to hold four to five tons and designing cars that will carry from five to ten tons.

HAVE SOFT TREADS

You mention some of the steel wheel difficulties. We believe that a steel casting is usually so soft in the tread that it will not last more than a few weeks in modern mine service where the trips are hauled long distances at high speeds, and when braking or spragging is necessary a steel wheel will not last more than one round trip. If they are made heavy enough to give much wear on the tread they cost two to three times the price of cast iron, and if they are made light enough to compare in first cost with cast iron they flatten between the spokes and you have a wheel with as many sides as you have spokes within a short time.

We believe the mining company to which you refer has made strong ef-

forts to secure a steel wheel and has tried to forge or roll these with little success and at high cost.

Steel wheels are largely used on railroad cars today on account of their flange strength, the steel flange being stronger than cast iron, but as to actual economy cast iron wheels are being used today in quantities that show them to be on the increase instead of the decrease, and only on their heaviest cars where the flange-strength limit has been reached are they using steel wheels. Large steel wheels can easily be rolled but this is a serious problem in manufacturing small wheels.

LOST POWER AT CURVES

You overlooked one important point in reference to the steel wheels and mine car wheels in general. At least 99½ per cent of all mines now in use have wheels that rotate on the axle. The particular mine to which you refer is equipped with cars that have the wheels pressed on the axles and the bearings are in boxings. This makes a car consume considerable power in rounding curves for wheels pressed on axles on sharp curves makes it necessary for one or the other wheels on the axles to slip. The trackage in most mines contains curves that are rather sharp, especially at room necks.

You will find upon investigation that the reduction which you give in weight of steel under cast iron wheels is somewhat overestimated and we doubt if there is such a difference, especially if the steel wheel has sufficient tread for any reasonable amount of wear.

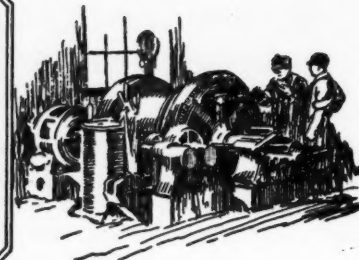
Chilled cast iron is one of the hardest substances known and, when polished, gives a very smooth running wheel on a rail. Cast steel or rolled steel wheels cannot be made satisfactorily when they must be machined in the hub for the fitting of roller bearings or, in a number of instances, arranged for lubrication in the wheel itself. As stated above, most of the wheels run loose on the axle, so there must be some bearing provided in the wheel itself and this practically eliminates steel wheel construction—either the rolled or cast type.

Some English steel wheels were shipped to this district about two years ago and they lasted about 60 days in service. Ten miles an hour speed, common in the United States, is different from hand pushed service in England.

WHEELMAN.



Practical Pointers For Electrical And Mechanical Men



Oil Circuit Breaker Should Receive More Frequent Attention

Test Breaker by Hand First, Then Electrically,
But Not Connected with Line—Inadequate Con-
nections May Heat Equipment—Set Breaker Plumb

By H. J. Pfandhoefer
General Electric Co.

An oil circuit breaker is the valve for the outlet or intake of generated electrical energy, and if not properly installed or maintained, stops the production or reception of power. It is, therefore, extremely essential that it be properly installed, and after installation that it receive as much care as a main steam valve or water valve.

Oil circuit breakers when operating under short circuit must open many times the normal generating capacity of a system, for, when a short circuit occurs, the current rises greatly and this higher current must be broken at the time of trouble. For this reason some points to be borne in mind when installing a circuit breaker may well be enumerated:

INSTALLATION SUGGESTIONS

Installation—(1) All manufacturers in shipping oil circuit breakers provide complete instructions for the installation of the breaker. Follow these instructions carefully and to the letter.

(2) After installation carefully check all moving parts to see that they function properly and freely, and that all bearings run free.

(3) Check studs and be sure that they are properly tightened in place.

(4) Inspect contacts for alignment to make sure that they all seat properly, that they do not bind, and that all contacts make and break at the same instant.

(5) Be sure that the tanks are provided with the right kind of oil and are filled to the proper level, and that the oil is clean and dry.

(6) Oil all moving parts on the mechanism thoroughly before attempting to put it into service.

(7) The breaker should now be ready for trial. Always try the breaker by hand first whether manual or electrical, and be sure that the breaker is dead before this trial is made.

BEFORE PUTTING ON LINE

(8) If the breaker is electrically operated and all the foregoing tests show its correct functioning and if further the breaker operates satisfactorily by hand, then try electrical operation with the breaker still disconnected from the line. Do not try to operate it electrically with the tanks off. The tanks should be in place so that the additional effect of the contacts traveling through the oil is obtained. If trial is made without the tanks, there is also some danger of injury to the breaker because the contacts lack cushion when they do not travel in oil.

(9) Connections can now be made to the breaker, and when made they should be tight and of ample size, otherwise heating may develop in the breaker. The equipment may be held responsible for this heating, when as a matter of fact, the trouble is in the heating of the connections and the transfer of this heat from them to the breaker.

(10) Be sure the breaker frame is thoroughly grounded.

GIVE BREAKER AIR

A Few Don'ts: (1) Don't install a breaker in a dead air pocket. All electrical apparatus must have changing air. I have seen many cases where breakers installed in dead air pockets have unduly heated simply because the air was never changed. As a result the heat continually

pyramided, and the breaker was held at fault when the circulation of a small quantity of air was all that was needed.

(2) Don't guess. Your guess may be wrong and cause a shutdown which, of course, means a loss of revenue. If you do not know, find someone that does or look up your instructions on that particular breaker and find out.

(3) Don't expect an indoor breaker to withstand the elements. It is not expedient to install one of this type in a wet room or by a window left open during a storm.

(4) Don't install the circuit breaker so that it is out of alignment. If it is not properly aligned at the time of the installation some parts may bind just when you want it to open automatically.

(5) Don't install a breaker too small in ampere-carrying or in interrupting capacity and expect it to function properly on your system. In the first case the breaker will heat; in the second trouble will develop if the breaker has to operate under a short circuit.

INSPECT YOUR BREAKERS

An oil circuit breaker is liable to be regarded as a piece of apparatus to be installed and forgotten. There are no rotating parts to call the operator's attention to the fact that it is a piece of electrical apparatus and consequently he neglects it. An oil circuit breaker, like any other piece of electrical apparatus should receive ordinary care, or the best results will not be obtained from it. One would not think of allowing a turbine to run year in and year out without periodical inspection, or at least without putting some oil in the bearings. An ounce of care in installation and maintenance, as with all electrical equipment, may save many pounds of regret. Equipment other than electrical needs care throughout its period of use, but electrical apparatus is unfortunate in that it often falls into the hand of those who do not properly understand it.



News Of the Industry



Coal Hearings in Congress Elicit Many Remedies for Emergencies; Constitutionality Imperils Legislation

By Paul Wooton

Washington Correspondent of *Coal Age*

Constitutionality is the big obstacle in the path of coal legislation. This was brought out clearly during the second week of the coal hearings before the interstate and foreign commerce committee of the House of Representatives.

The committee is earnest and conservative. It has no desire to attempt to exceed the powers of Congress. Chairman Parker evidenced marked impatience when Representative Black, of New York, suggested that the Supreme Court should be allowed to pass on the question if there is doubt as to the constitutionality of proposed coal legislation. Chairman Parker made it very clear that the committee will recommend no legislation which fails to square in all particulars with the Constitution.

The chances of any legislation have been hurt by differences of opinion among the members of the House as to what form the legislation should take. Each witness has a different plan and most of them are hostile to the other proposals. There is marked opposition to the creation of another "extravagant" government agency to deal with coal. There has been considerable crystallization of opinion against lodging emergency powers with the President.

Operators Invited to Appear

In line with the plans of Chairman Parker fourteen prominent bituminous operators have been invited to appear before the committee. They are to be asked what they have to suggest to prevent an interruption of coal supply. The position that they will take already is indicated. A spokesman for the operators declares that there is no problem in bituminous coal. The demand expressed at these hearings is for protection in the matter of anthracite supply. Anthracite and bituminous coal are very different commodities, he points out. If anthracite were another color and if it were not known by the name "coal," the bituminous product would not be dragged into this hearing, it was said. The demand for legislation is coming from the anthracite-consuming territory.

The point is made that under present conditions a strike among the soft-

coal workers would not interfere particularly with supply. Non-union operations have increased to the point where they can meet the country's requirements. All western Kentucky is now non-union. Only 5 per cent of West Virginia's production now comes from union mines. Indiana and the Pittsburgh district are developing production which is not under union control.

No Assurance Against Strikes

The position of the operators seems to be that the public is amply protected in the matter of bituminous coal supply, except possibly against strikes. The producing area is scattered widely. There is no semblance of monopoly or centralized control of production. As there now is no great probability that a coal strike could stop enough bituminous production to cause much trouble the greater danger lies in the possibility of a railroad strike. Even that is becoming more remote, but the hearings before this same committee developed the fact clearly that no absolute assurance against strikes can be established. The feeling is that that situation can be controlled only by public opinion. The conduct of the public during the last strike, it will be pointed out to the committee, has done more to discourage another anthracite strike than any legislation that could have been enacted.

All Witnesses Have Cures

During the week the committee heard as many remedies as witnesses. Representative Black, of New York, wants to set up a government corporation empowered to operate coal mines during emergencies. He also thinks the coal industry should have a czar—a man the public could picture and who could be held responsible in the public mind. He has in mind for the coal industry a position comparable to that held by Judge Landis in baseball; by Will Hays in the motion-picture business, and by L. S. Storrs in the electric-railway industry.

Representative Mead, of Buffalo, would set up a council composed of a representative of the Federal Trade Commission, of the Interstate Com-

Plan to Assure Consumer Of Coal Quality

In line with announced plans of Joseph Buchanan, Indianapolis (Ind.) smoke inspector, for the regulation of coal sales so that the consumer may be assured of the quality of the product he buys, the Better Business Bureau has drafted for presentation to the City Council an ordinance providing that when coal is delivered a duplicate ticket, designating "either the true, usual and customary name of such fuel, or the name of the state from which it comes, together with the name or number of the district, mine or seam from which it was mined," be given to the purchaser with a description of the size and character of the fuel.

Substitutions or mixtures of fuel would not be permitted under the ordinance, except by understanding with and consent of the purchaser. Penalties for violation of any of the provisions include fines ranging from \$25 to \$100 for the first offense and from \$50 to \$200 and revocation of the license of the offenders for the second offense. The inspector said he would include a proposal to have all coal sold according to government specifications and arrangements for tests to be made of questionable fuel by the city chemist.

merce Commission and of the Department of Labor.

Representative Boylan, of New York City, urged that the President be empowered to take over the mines in an emergency operating through the departments of Commerce and Labor. He also condemned the Pennsylvania anthracite tax.

Urges "Pitiless Publicity"

"Pitiless publicity" was recommended by Representative Fish, also from New York, as the best way of controlling the coal industry. He told the committee that the coal situation is the greatest issue before Congress and that the public should have the whole truth of current developments in the coal situation. He recommends fact-finding by the Interstate Commerce Commission. He also asserted that a powerful lobby has been working for years to prevent this legislation and that a large majority of coal operators are unscrupulous in their relationships with the public.

Journalists of Americas Hold Pan-American Congress

With the capital decorated as for an inaugural, publishers and editors from Central and South America, Mexico and the West Indies arrived in Washington on April 7 and met a similar group of representatives of the press from all parts of the United States at the First Pan-American Congress of Journalists.

The gathering is considered the most important journalistic conference ever held in the New World. Twenty-one republics are represented. Dr. Walter Williams, director of the School of Journalism, University of Missouri, was elected permanent chairman and Willis J. Abbott, editor, the *Christian Science Monitor*, Boston, vice-chairman.

Welcomed by President Coolidge and addressed, among others, by Herbert Hoover, the congress organized the Pan-American Association of Journalists to perpetuate the movement toward international understanding through the press initiated at the present gathering.

Among the prominent journalists taking part in the discussions at the Washington sessions were Señor Dr. Jorge Mitre, of *La Nacion*, Buenos Aires; Arthur Capper, Senator from Kansas; Rollo Ogden, editor, the *New York Times*; Frank B. Noyes, president of the Associated Press; Dr. James Melvin Lee, director of the School of Journalism, New York University; Señor Don Ernesto Montenegro, of *El Mercurio*, Santiago, Chile, and Dr. Benjamin Silva Herrera, of the *Diario Nacional*, Bogota, Colombia. These men discussed the part of the press in maintaining understanding among the American nations, as well as the various problems of news gathering, advertising and editorial policy common to all journalistic enterprises.

Following the Washington sessions of the congress, which terminated April 13, the 100 or more Latin-American editors started by motor bus on a tour of the eastern and central parts of the United States which will last approximately one month. On this tour many of the great industrial plants of the country will be visited and an inspection made of the highway development.

Kansas Shovel Operators to Consider Union Agreement

Five operators of the top vein of coal in the northern part of the Pittsburg (Kan.) field held a conference in Mulberry, April 7, with President Matt L. Walters and other officials of District 14, United Mine Workers, when it was decided that the miners should draw up an agreement for formal submission to the operators at once. Operators say they are paying the union scale for all work in the steam-shovel mines except what they class as common labor.

Refusal of the operators to sign a contract with the union including the scale for these employees was the occasion for the union miners "marching" on these mines a few weeks ago. That form of organization promotion eased after President Walters, other district officials and Alexander Howat, former president, were arrested. Their trials on charges of unlawful assembly and

Unskilled Workers' Wages Rise Rapidly Since War

The findings of a recent report on wage changes in 29 countries by the International Labor Office are to the effect that international commercial competition has depressed wages in the export and import industries out of proportion to changes in wage levels which have taken place in strictly domestic lines of production.

The Scandinavian countries are the outstanding examples of those in which real wages are much higher than the 1914 index. The United States, Canada, Australia, Spain, Italy and Switzerland have in the past two years moved up into a similar position.

Another interesting fact brought out by the study is the position of unskilled as compared with skilled labor. In 1914 unskilled workers' wages were about 50 to 70 per cent of skilled workers' wages; in 1920 they were 80 to 90 per cent. This ratio has declined slightly but still remains much higher than in 1914.

disturbing the peace have not yet been held. All are out on bond.

In a referendum on March 30 miners of the district decisively voted down a levy of 2 per cent of the earnings of working miners for the relief of unemployed members and a defense fund for the arrested men.

War Department Wants Coal

The New York General Intermediate Depot, Quartermaster Supply Office, U. S. Army, Brooklyn, is receiving bids for the various camps, depots and buildings under its jurisdiction in the states along the Atlantic sea coast as far south as Delaware for nearly a quarter million tons of anthracite and bituminous coal, besides small tonnages of coke and briquets.

The first opening took place April 14, when bids were received for 71,445 gross tons of the various sizes of anthracite, 34 net tons smithing coal, 6 tons bituminous mine-run and 175 tons of briquets.

On April 19 bids will be opened for 10,851 net tons of bituminous mine-run and 7,038 net tons bituminous lump. On April 23 tenders will be received for 48,763 net tons of bituminous mine-run, 7,250 tons of bituminous lump and 30 net tons of coke. On April 27 bids will be opened for 58,517 net tons of bituminous mine-run, 26,971 tons of bituminous lump and 205 net tons of coke.

Indiana State Bids Rejected

All coal bids for state institutions of Indiana submitted recently have been rejected. The state joint purchasing committee said bids were received from forty-two firms. All the bids were considered too high. New specifications will be sent out and a new contract is expected to be let about May 20. The contract will call for thousands of tons of coal for the coming fiscal year.

I. C. C. Denies Plea to Make Emergency Rates Permanent

The Interstate Commerce Commission on April 12 denied petitions that emergency rates prescribed on coal from Southern fields to New England points during the anthracite suspension be made permanent or continued in effect pending establishment of permanent rates. The emergency schedules became effective Dec. 31 last and will expire April 30.

The Commission said its action was not to be construed as prohibiting the carriers from voluntarily continuing the present rates for such additional time beyond April 30 as in their judgment necessity might require.

The Commission reopened the proceedings for further hearings at a date to be fixed later, to determine the reasonableness of rates on bituminous and semi-bituminous coal and coke from mines in Pennsylvania, Ohio, Maryland, Virginia, West Virginia and eastern Kentucky to all points in the Middle Atlantic and New England States. The hearing also will consider rates on semi-anthracite from mines in Virginia to points in the Middle Atlantic and New England States.

The petitions to make the emergency rates permanent were filed by the New England Governors' Fuel Committee and others.

Ewen Miners Sign Contract For Pay by Ton

A new wage agreement, based on pay by the ton, has been accepted by the miners of the Schooley and Ewen shafts of the Ewen Colliery of the Pennsylvania Coal Co., at Pittston, Pa. Heretofore the men have worked on consideration, \$8.80 for miners and \$7.70 for laborers.

The new working agreement was framed last week at a meeting of representatives of the union and officials of the Pennsylvania Coal Co., following an inspection of the chambers in both shafts. The belief is that the new wage scale at the Ewen will be a benefit to the miners and company alike. International Organizer Frank Agati, who served as a member of the negotiating committee during the suspension, addressed the miners and urged acceptance of the new agreement.

Receiver for Southern Coal

Harry A. Mackey, City Treasurer of Philadelphia, was appointed receiver in equity for the Southern Coal & Iron Corp. on April 8 by U. S. District Judge Dickinson at Philadelphia under a bill in equity filed by William A. Behan, secretary and treasurer of the concern. The company is a Virginia corporation, capitalized at \$3,000,000, and has offices in Philadelphia. Its home office is in Roanoke, Va. Its business is mining and selling iron, iron ores, coal and sand, and it has plants at Rittenhouse Gap. It owns leaseholds and mineral rights and also the capital stock of the Roanoke & Botetourt R.R., which represents a graded railroad right of way in Virginia.

British Miners Reject Lower Wages, Longer Hours and District Pacts; Invite Owners to Continue Parleys

Miners' delegates from all British coal fields, at a conference in London April 9, adopted a resolution against the acceptance of wage reductions, the lengthening of hours and the substitution of district for national agreements regarding minimum wages. As a result of this action another serious deadlock looms between the operators and miners.

Acceptance of some of the proposals was suggested as part of a panacea for Britain's crisis in the recent report of the Royal Coal Commission, but since the publication of this report the miners have been careful to state that they have not refused to follow it as a whole in seeking to put an end to the crisis. Their opposition to the suggestions of the Coal Commission in such vital matters as those stated above, however, has created pessimism as to the feasibility of general settlement of the crisis along the lines laid down in the report.

Public concern is intensified by the fact that on May 1 the coal subsidy will be withdrawn and some new way must be found of adjusting the serious differences between the mine owners and the miners.

A ray of hope was seen when it was stated after the conference of the miners' delegates that the miners' executives had extended an invitation to the mine owners to meet them again immediately for the purpose of continuing negotiations. It is felt that last Friday's conference did not decide anything definite, but simply gave a hint to the miners' leaders in various districts as to what the delegates at

the general conference thought the best line to be adopted.

After the districts have been heard from there will be another meeting of the miners' delegates, following which something definite doubtless will be decided.

It is not likely that the Premier, Stanley Baldwin, or any members of his Cabinet will meet either the mine owners or the miners for the present. Governmental pressure, however, will be brought to bear in an endeavor to bring the warring factions to an agreement. It will be pointed out that a stoppage in the mining industry will result in serious financial losses not only in the coal industry but in affiliated industries.

The government is ready to give all possible assistance to both sides in the controversy and in the negotiations which, it is believed, will be resumed in the near future.

Bittner Asks Rehearing

Petition for a rehearing was filed with the West Virginia Supreme Court of Appeals at Charleston on April 6 for Van A. Bittner, chief international representative of the United Mine Workers in northern West Virginia. By this procedure the sentence of six months' imprisonment for contempt imposed by Judge I. Grant Lazelle in Morgantown will be stayed again. A month ago a writ of error was refused by the Supreme Court of Appeals. In the meantime Bittner is at liberty on the strength of the bond which he originally furnished for the writ of error.

Supreme Court Sustains Commerce Commission on Emergency Priority Orders

In two decisions by Chief Justice Taft the U. S. Supreme Court on April 12 further sustained the authority of the Interstate Commerce Commission to issue priority orders for shipment of coal in periods of emergency, clarifying both the Elkins act and the Transportation act. Many points were covered by the Court last year in the Avent case; the decisions April 12 amplify these views and cover issues not raised in the previous case.

The two decisions reversed the actions of the U. S. District Court for Eastern Michigan, which had sustained demurrers to indictments returned against defendants under the Elkins act on charges of having violated provisions of Service Order No. 23 of the Interstate Commerce Commission, issued in July, 1922, establishing priority in coal shipments. The federal government appealed from the lower court's decisions. The action of the Supreme Court reinstates the indictments for trial on the merits of the cases.

The P. Koenig Coal Co., of Detroit, was indicted on charges of knowingly receiving as a shipper concessions from a carrier obtained by false representations to the carrier. In one count it was charged the Koenig company obtained shipment of coal from a West Virginia mine to Detroit on representations that the coal was destined for the Samaritan Hospital, when, in fact, it was intended for, and was delivered to, the Dodge automobile factory. Other counts were of a similar nature. The District Court sustained a demurrer on the ground that there could be no indictment under the Elkins act as no offense could be committed without the guilty knowledge and collusion of both shipper and carrier.

Shipper's Plea Denied

In its decision reversing this opinion, the Supreme Court holds there is nothing in the statute which releases a shipper from guilt because the carrier which granted the concession thought it was lawful.

An indictment against the Michigan Portland Cement Co. was returned on the charge that, in connection with the Bewley Darst Coal Co., the company obtained shipment of coal from a Kentucky mine to the Municipal Light & Power Co. at Four Mile Run Lake, and appropriated the coal to its own use. A demurrer on grounds similar to that in the Koenig company case was sustained by the District Court.

In the arguments before the Supreme Court, counsel for the cement company raised the points that violations of the Elkins act must be limited to concessions or discriminations violating a published tariff of a carrier and that the Transportation act does not give the Interstate Commerce Commission authority to fix preferences and priorities in transportation in that car service does not include transportation. Both of these contentions are swept aside by the Supreme Court decision.



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Miners' Representatives Keep a Date with British Premier

Officials of the Miners' Federation of Great Britain in front of 10 Downing St., London, where they discussed the findings of the Royal Coal Commission with Stanley Baldwin, the Prime Minister. Left to right: Tom Richards, Herbert Smith, president of the Federation; A. J. Cook, secretary, and W. Richardson.

New England Retailers' Meeting Stresses Better Coal Quality and Service

Regret that the anthracite operators had seen fit to abandon the practice of reducing prices on domestic sizes on April 1 was voiced by members of the New England Coal Dealers' Association in a resolution unanimously adopted at the twenty-fourth annual convention of the organization, held at the State Armory, Worcester, Mass., April 7-8. This departure from tradition, they explained, had created more or less resentment in the minds of some of the household consumers.

In discussing the action to be taken when the resolution was offered for discussion, one retailer wanted to know how he was to placate the irate consumer when the latter objected to paying winter prices for summer deliveries. Another dealer stated that the failure to reduce prices had sacrificed the favorable opinion some of his customers had for the industry during the late strike. A third speaker said that his retail company had made a cut of 50c. per ton in order to hold the good will of the householders.

A second resolution offered at the same time and adopted without discussion urged the producers to maintain a strict inspection service so that all shipments made should be up to the uniform standards approved by the Anthracite Operators Conference last year.

Urges Solid Front Against Oil

Harry L. Gandy, executive secretary, National Coal Association, was the principal speaker at the first day's session of the convention. Mr. Gandy urged organized opposition to fuel-oil competition and suggested further that the coal trade devote more attention to quality and service and less to price in its salesmanship efforts. Turning to the question of bituminous coal for domestic consumption in New England, he cited the experiences of the recent hard-coal strike and the limits on anthracite production as reasons why the dealer should consider soft coal.

Mr. Gandy closed his address with a brief discussion of the legislative proposals now being considered by Congress. Suggestions for emergency seizure and operation of the mines, he asserted, lacked a Constitutional basis. Moreover, the taking over of the mines would only add to the public burdens, compelling the consumer to pay more for his coal. Nor is there any warrant for the fact-finding legislation, which must rest upon a breaking down of the safeguards against federal encroachment in the domain of private business. Harry E. Davis, counsellor to the Chamber of Commerce of the United States, also touched upon the legislative situation in his annual report.

At the Thursday morning session C. Willing Hare, vice-president and general manager of the Anthracite Coal Service, outlined the plans of the hard-coal producers to meet competition and to help the retail distributor meet competition. The Anthracite Coal Service had been launched, he said, because the competitive situation demanded that

Soft Coal an Aid to Art, Says British Painter

Sir John Lavery, British artist, on arriving in London last week, had some interesting comments to make on his recent five-month stay in the United States. Speaking of the effects of the temporary use of soft coal on New York, the artist said: "The effect of this temporary eclipse on great blocks of masonry is beautiful in the extreme, and I thought if Turner had been alive how it would have appealed to him. The softened effect on huge skyscrapers is wonderful."

the industry meet its sales problems with trained engineering skill. The gains since made in recovering business that had been lost or was about to go to other fuels had fully justified the service.

Col. A. N. Payne, assistant to the vice-president in charge of traffic, Boston & Maine R.R., outlined the different classes of loss and damage claims presented to railroads and the steps which should be taken by claimants, first, to establish clear records on cars and, second, to support their claim papers with evidence which will lead to prompt payment.

Clear thinking, asserted Richard F. Grant, president, Susquehanna Collieries Co., will cure many of the ills and expose many of the fallacies of the day. There is too much loose thinking, too great a willingness to let others do our thinking. Thinking based upon knowledge of the facts of a situation will end much of the unfair charges now hurled against business and American institutions. It will lessen and curb the cry for government in business because it will bring the realization that managerial ability is a personal, not a bureaucratic, possession and that any system which gives men leadership except upon demonstrated merit invites destruction.

W. A. Clark was again the unopposed choice for president of the association.

Mines of Pursglove and Paisley Interests Resume With Reduced Wage Scale

The Pursglove interests, of Cleveland, last week posted notices at their mines announcing that beginning April 12 the plants of the Cleveland-Morgantown Coal Co., controlled by them, would be operated on what amounts to the 1917 wage scale. The notices were placed at the four mines of the company on Scotts Run, in the Monongalia field of West Virginia, on April 7. Following closely after the formation of the new union district, No. 31, this action is regarded as significant, especially as the Cleveland-Morgantown Co. has been one of the few companies in the Morgantown district which has continued to operate in agreement with the union at a time when other companies were operating on an open-shop basis.

Mines of the Pursglove interests were closed down on April 1, the explanation being given that the company could no longer operate under the terms of the Jacksonville agreement. The new wage scale represents a 30 per cent reduction from the Jacksonville scale, with pay at the rate of 60c. a ton for picking mining in entries, rooms and pillars, with 62½c. an hour for drivers, motor-men, gathering locomotive men, trackmen, timbermen, bratticemen and 75c. an hour for carpenters.

Steps also have been taken by the Paisley interests, who control mines in the northern Panhandle of West Virginia, in eastern Ohio and southern West Virginia, to operate the Murray mine of the Morgantown Gas Coal Co. on a lower wage scale, several cars having been loaded last week. The understanding is that an agreement has been entered into with the men employed at the mine to pay at a rate about 20 per cent lower than the Jacksonville scale.

With the Pursglove and Paisley interests operating independent of a union agreement the Gilbert-Davis Coal Co. is about the only firm of any size in northern West Virginia that continues to work under the Jacksonville scale.



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British Mine Owners Discuss Coal Situation with Premier

In an effort to arrive at an amicable settlement of Britain's coal difficulties in accordance with the findings of the Royal Commission the operators called at 10 Downing St., London, for a conference with Stanley Baldwin, the Prime Minister. Left to right: W. A. Lee, C. B. Crawshaw, Sir Adam Nimmo and Evan Williams.

Witnesses Say Runner of Open-Type Cutter Ignited Gas at Eccles Mine; Jury Declares Cause Undetermined

Failure of a machine runner to test for gas before taking his machine to the face of a place in the Eccles mine of the Crab Orchard Improvement Co., at Eccles, Raleigh County, W. Va., was declared by witnesses as probably the most vital factor in the explosion which occurred in that mine on March 8. Testimony set forth as possible contributing factors an accumulation of gas in the place resulting from the collapse of a three-day old canvas stopping in the next to the last crosscut, probably due to a fall of roof, and an arc from an open cutting machine. This theory was many times repeated by witnesses at the inquest of this explosion, which was held at the mine on April 7.

On the other hand, the jurymen with due caution expressed their view in a verdict that the nineteen victims of the explosion "came to their death by a gas and coal-dust explosion and afterdamp. We are unable to find, from the evidence produced, how the gas was ignited."

Best Runner on Job

William Dickey, the machine runner in question, was the best runner on the job, according to J. P. Horn, acting general superintendent. In the opinion of other witnesses who were more closely associated with him, however, he was the best only as a "coal-getter." Each witness when asked whether he believed this cutter had examined the place carefully before allowing the machine to approach the face answered in the negative.

Harry Nisbet, fireboss, remarked on the stand that complaints came to him that this man frequently omitted the preliminary inspection of his places. Mr. Nisbet said he warned Mr. Dickey repeatedly not to omit this precaution. This fireboss added, when questioned, that he had no authority to discharge this alleged careless man. He admitted that he had not at any time reported this alleged willful violation of the mine law to anyone in authority.

Four years ago Mr. Dickey and his son ignited gas at the face of a place in the Eccles mine, as a result of which the latter was burned. The mine at that time belonged to another company. On this occasion Mr. Dickey did not carry a safety lamp with him.

Marshall Loving, section boss, said that shortly before the occurrence of the explosion he met Mr. Dickey with his machine near the place where the explosion is believed to have originated. The cutter's safety lamp was not lit. A tracklayer later told Mr. Loving that he saw the cutter light his lamp.

On the day of the explosion he found a trace of gas at the faces of Third Left off the aircourse in Section A-1, where the explosion seemingly originated. In addition to bossing, his duties consisted of bratticing and shot-firing. The canvas in the places inspected that day was in fair condition, but in spots it was more or less worn.

Fireboss Nisbet asserted that the

place where Dickey was cutting in Section A-1 gave off much gas. A line brattice had been hung in this place to a point within about 12 ft. of the face. In his run on the day of the explosion, he found the ventilation good and the places visited clear of gas. Although the last crosscut in the place had been completed three days, the crosscut next to the last had not yet been sealed with a permanent stopping. A canvas brattice hung in this crosscut.

Section Boss Loving remarked that the top in this vicinity was none too good. He thinks the temporary canvas stopping in the next to the last crosscut may have been torn down by a slate fall. An accumulation of gas also might have followed a disarrangement of the line brattice already mentioned. He made his last inspection of this place three and one-half hours before the explosion and found no gas. Several falls had occurred in the vicinity, but these were not sufficient, in his opinion, to interfere with ventilation to any great extent.

About 70 per cent of the coal was mined by pick from pillars. Narrow places were cut by three machines—a permissible undercutter, an open-type arcwall and an open-type turret or center-cutting machine. The last-mentioned machine was believed to have been responsible for the ignition of gas. It had reached the face, but none of the tools had been removed from it, and the controller was shut off. A safety lamp hung from the rear headlight of the machine. The bodies of the two runners were found about 40 ft. from the machine. It is believed that after the gas was ignited they ran outby until they were overcome.

Wanted Dust Removed

Robert Lilly, state mine inspector of the district, made with W. L. McGinnis, state inspector of an adjoining district, a joint inspection of the Eccles mine on Jan. 25, 26 and 27. As a result of this inspection they recommended that a large quantity of dry coal dust in Section A-1 be removed and that timbers be set. Otherwise the mine was in excellent condition.

C. A. Sine, superintendent, did not believe that much of the dust that accumulated was dangerous inasmuch as it was mixed with a large quantity of sand that had been ground fine under the wheels of the locomotives. Chief R. M. Lambie, of the West Virginia Department of Mines, said that when such a mixture is suspended in the air most of the sand would fall away from the coal dust to the ground. He drew from Mr. Sine an opinion that an inert, pulverized material, preferably limestone dust, would have stopped the propagation of the flame.

The changes recommended by State Inspectors Lilly and McGinnis after their last inspection were being made according to J. P. Horn, acting general superintendent. The Eccles mines were

Miners Sign Scale and Give Employer Scarfpin

James Moore, owner and operator of the Sunnyside mine, at Evansville, Ind., is wearing a diamond stickpin, presented him by his employees when they renewed their wage contract last week.

Loyalty of Moore's miners to their employer was one of the chief obstacles in the way of southern Indiana union miners in their recent attempt to unionize that field. The Sunnyside miners refused to quit work despite the appeal of the union men when Moore asked them to remain.

Moore's contract with his men calls for 90c. a ton or \$6 a day for mining this year. This is the same wage paid them last year.

taken over by the Stonega Coke & Coal Co. on Sept. 15, 1923. Since that time, to the best of his knowledge, no other gas ignition had occurred in this mine. Sixty cars of refuse had been removed from the haulway of Section A-1.

Much Brake Sand

The grades of the track in this section are heavy—as much as 10 per cent—and on these the locomotives used an average of two-thirds of a carload of sand per day. In contradiction to hints made by several witnesses to the effect that brattice cloth was not always available when needed, Mr. Horn testified that more than sufficient canvas always was on hand. The company expected its men to tear down canvas where it was not needed and to use it over again so long as it was serviceable. Some men were reluctant to do this.

All machine runners and their assistants had been examined for competency—a step in advance of the mine law, which requires examination of runners only. Gas samples were taken and analyzed each week. The mine was sprinkled at regular intervals by water boxes. Section A-1 was thoroughly sprinkled the day before the explosion.

All evidence as to the origin of the explosion indicated that the place mentioned and the facts stated were the cause of the disaster. The fact that coal dust played the biggest part in the explosion was definitely established—first by the distance traveled and second by the evidence of coking. Inspector Lilly believes that the main force of the explosion in Section A-1 traveled outby through the aircourse. Less force was exerted in the haulway because here the pressure was relieved by expansion into the many rooms that connected with it. He believed that the two split paths of the explosion met at the junction of the two headings of Section A-1 with No. 1 West headings. The blast was boosted and receded in intervals until it finally spent itself through a relief of pressure. Manifestations of force were noted as much as 2½ miles from the seat of the explosion. Where the suspected cutting machine was in operation little evidence of violence was seen.

Mine Accidents Claim 164 Lives in February; Fatality Rate Recedes

Accidents at coal mines in the United States in February, 1926, caused the death of 164 men compared with 318 in the preceding month, according to information received from state mine inspectors by the U. S. Bureau of Mines. The total fatality rate for the month, based on a production of 48,660,000 tons of coal, was 3.37 per million tons, as compared with 4.25 for February, 1925. Of the 164 lives lost in February, 157 were at bituminous coal mines, only 7 fatalities occurring in the anthracite field, the anthracite mines being closed until operations were resumed Feb. 18. The fatality rate for bituminous mines in February was 3.37 per million tons based on an output of 46,577,000 tons of coal, and the rate for anthracite was 3.36, based on a production of 2,083,000 tons. In February, 1925, the rates were 3.77 and 6.83 respectively.

Two major disasters—that is, accidents causing the loss of five or more lives—occurred during the month. On Feb. 3 a mine explosion at Horning, Pa., caused the death of 21 men. On Feb. 16 an explosion, caused by shot-firing, killed 8 men at the Nelson mine, at Nelson Creek, Ky.

Accident records covering the first two months of the year show a loss of 482 lives, which is 51 more than for the same period in 1925. The rate per

Shaw Invests in Project To House Miners

George Bernard Shaw, Irish playwright and socialist, has lent £30,000 at 5½ per cent interest to the rural District Council of Easington, near Durham, England, which is to be used to help finance a big housing project, according to a London dispatch to the New York *World*, dated April 2. When questioned by newspaper men Britain's most prolific commentator refused to comment on the loan other than to state that it was "a purely private investment." Easington is a populous coal-mining district.

million tons for the period was 4.70 as compared with 4.08 last year. The rates for major disasters alone for these periods were 1.67 in 1926 and 0.55 in 1925.

An analysis of the principal causes of the 482 fatalities in 1926 shows a reduction in the per-million-ton death rates for all of the principal causes except explosions of gas and coal dust. A comparison of the rates for the first two months of the two years is shown by the following figures:

	Jan.-Feb., 1925	Jan.-Feb., 1926
All causes.....	4.085	4.703
Falls of roof and coal.....	1.810	1.756
Haulage.....	0.749	0.663
Gas or dust explosions.....	0.701	1.785
Explosives.....	0.274	0.098
Electricity.....	0.142	0.127

Glen Rogers Plant Passes to Old Ben for \$3,000,000

Since the recent announcement by the Old Ben Coal Corp., of Chicago, that it had acquired some coal properties and connections in the non-union fields of West Virginia and Kentucky confirmation has been forthcoming that the company purchased the Glen Rogers (W. Va.) plant of the Raleigh-Wyoming Coal Co. on April 1, although Carl Scholz, vice-president and general manager of the latter company, had denied the first report of the sale.

Approximately \$3,000,000 is said to have been involved in the deal, which includes 9,000 acres in Wyoming County. The Glen Rogers plant is said to be one of the best equipped in southern West Virginia, output in 1925 totaling 250,095 tons.

Preparing Safety Statement

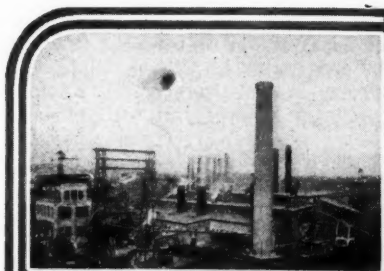
A comprehensive statement of the attitude of the Bureau of Mines on matters pertaining to safety and health in coal mines is being prepared by George S. Rice, the Bureau's chief engineer. This statement will contain 10,000 words and will be published in the form of a bulletin. It will be fully annotated and will be used as a text book for the safety extension service.

Sealed Proposals Will Be Opened by the Supt. of Lighthouses, Philadelphia, Pa., 2 P. M., May 18, 1926, for anthracite and bituminous coal, acetylene and acetone, and fuel oil for fiscal year 1927. Information upon application.

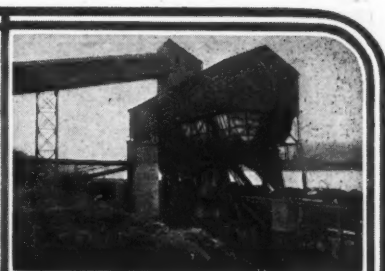
Coal-Mine Fatalities During February, 1926, by Causes and States

(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground											Shaft				Surface							Total by States			
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Explosions of gas or coal dust.	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Other causes.	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Electricity.	Machinery.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1926	1925
Alabama.....	1		1									2													2	5
Alaska.....																									0	0
Arkansas.....		1										1													1	3
Colorado.....	2											3													3	3
Illinois.....	7	1	5				3					16													16	10
Indiana.....	3											4													4	54
Iowa.....	2				1							3													3	3
Kansas.....	1											1													1	0
Kentucky.....	3		2	8								13									1				14	7
Maryland.....																									0	1
Michigan.....	1											1													1	0
Missouri.....	1											1													1	0
Montana.....							1					1													0	1
New Mexico.....																									1	2
North Dakota.....																									0	0
Ohio.....	6		1	1								8			1		1						1	1	10	4
Oklahoma.....																									0	1
Pennsylvania (bituminous).....	11	3	5	21	1							41				2	2								43	20
South Dakota.....																									0	0
Tennessee.....	1				2							3													3	3
Texas.....																									0	0
Utah.....	1											1													1	3
Virginia.....	1		2						2			5													5	0
Washington.....										1		1													1	3
West Virginia.....	28	1	11				2		1			43										1	3	4	47	24
Wyoming.....																									0	0
Total (bituminous).....	69	6	28	30	5		6		3		1	148			1	2	3			1		1	4	6	157	147
Pennsylvania (anthracite).....	4		1	1								7													7	49
Total, February, 1926.....	73	6	29	31	6		6		3		1	155			1	2	3			1		1	4	6	164	
Total, February, 1925.....	69	5	28	58	9	1	6				5	181	1		1		2	4		1		2	6	13		196



News Items From Field and Trade



ALABAMA

Fire of unknown origin broke out in abandoned workings in the Flat Top mines of the Sloss-Sheffield Steel & Iron Co. on March 26. The blaze was confined to a restricted area a mile or more from the portion of the mine being worked and was extinguished without injury to workers and caused only a nominal property damage. This mine is operated by the State of Alabama under lease and is worked with convict labor, the coal being delivered to the owners at a stipulated price per ton.

Work-Train Collision Kills Seven.—A passenger train operated on the Birmingham Southern R.R., a subsidiary of the Tennessee Coal, Iron & Railroad Co., transporting employees of the latter to and from Birmingham and other points to the Bayview and Edgewater coal mines, collided head-on with a work train of the same line March 30, resulting in the death of seven employees and the injury of twenty-one others. Those killed were all negroes. Only two of the others were injured seriously.

The Birmingham Southern R.R. has ordered 100 gondolas from the Tennessee Coal, Iron & Railroad Co.

ILLINOIS

The Republic Coal & Coke Co., Chicago, will henceforth exclusively distribute Roxana Petroleum Corporation's entire production of petroleum coke from its Kansas, Illinois and Indiana refineries.

Magnetically locked safety lamps have been introduced into thirteen mines in southern Illinois. The move was the result of the explosion several months ago at West Frankfort which was caused by a miner tampering with a lamp in one of the passages.

Claim Illinois Record.—A record for two-man coal mining in southern Illinois is being claimed for Jack Pierson and Albert Kun at Ledford, south-east of Duquoin. From March 1 to 15 they loaded 461 tons of coal. Pierson was then taken ill, and during the next ten days Kun working alone loaded 240 tons.

INDIANA

Panhandle Mine No. 5, at Bicknell, which closed its general workings Feb. 25 to work new entries, has resumed hoisting with a full force. A shortage of rooms was caused a few months ago by the squeezing and caving of a number of working places on the east side of the mine. A night and day struggle for new rooms to replace the loss was maintained. All the mines in the Bick-

nell field have been working for the past month, which is considered rather exceptional for this season of the year.

The Standard mine, at Wheatland, which has been working steadily for the last few months, is increasing its daily tonnage by the addition of much new loading machinery.

The Warren Coal Co., of Terre Haute, has filed a certificate of dissolution with the Secretary of State.

KENTUCKY

Representative Kirk (Rep., Ky.) has introduced H. R. 10769, to establish a mine rescue station at Hazard. The bill was referred to the mines and mining committee.

NEVADA

Developing Nevada Coal Mine.—While Nevada produces nearly every known metal and many of the non-metals, no commercial body of coal has yet been developed. Herman A. Darms, who for several years has persisted in his efforts, although handicapped by lack of funds, to open up a coal prospect at Coaldale, about seventy-five miles west of Tonopah announces, however, that he is now financed to complete his development plans. He has already ordered a carload of timbers to be used in framing the old shaft to a depth of 280 ft. on top of the first coal structure, which was opened up three years ago. When work of timbering the shaft has been completed, it is his plan to extract 150 tons of the coal for use in the boilers of the diamond drills. The drills are good for 2,500 ft. and the ground will be thoroughly explored.

NEW YORK

The contract for furnishing 85,000 tons of fuel to the Great Lakes Transit Corp. (Conners Line) was let last week to Consolidation Coal Co. for 55,000 tons, to be delivered at Buffalo, and to the N. A. Hanna Co. for 30,000 to be delivered at Erie, Pa. Prices are withheld.

OHIO

The Johnson mine of the Cleveland & Western Coal Co., Dilles Bottom, employing 250 men was closed down indefinitely April 6 on orders received from Cleveland headquarters. The Franklin mine of the same company, at Stewartsville, idle since March 31, resumed operations the same day, and the Pipe Creek mine, largest in eastern Ohio, employing 700 men, is working.

Nearly 50 per cent of eastern Ohio mines are in operation at present, ac-

cording to an official report issued by C. J. Alberson, commissioner for the Pittsburgh Vein Operators' Association. The report shows daily production of 33,800 tons, which is 29 per cent of the maximum capacity of 113,100 tons. Forty-six of the 108 mines in the field are working.

Resume Strip Mining.—Strip mining has begun in eastern Ohio due to an increased demand attributed to the opening of the lake season. The Central Mining Co. has put two steam shovels to work on its properties along the Lincoln highway in Columbiana County. Other mines in the district report good prospects for steady work.

Papers have been filed increasing the authorized capital of the Byessville Coal Co. from \$12,500 to \$25,000. Alex Ramage is president and H. P. Muhlbach, secretary.

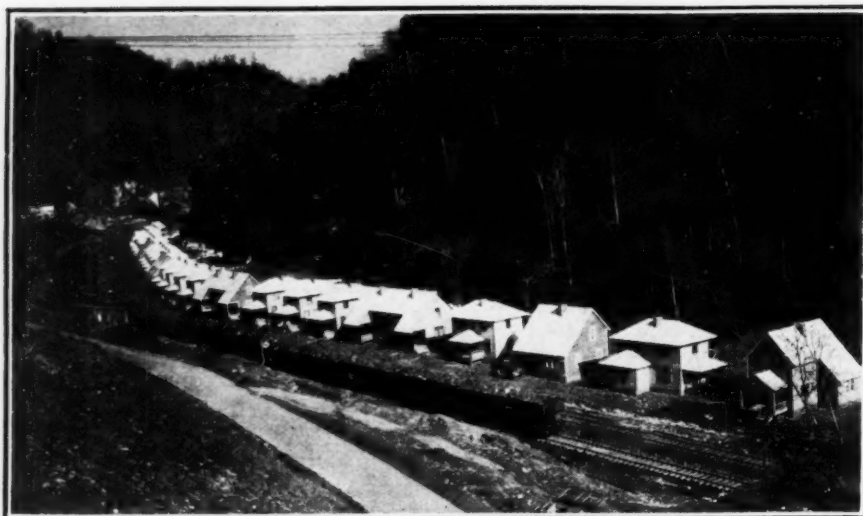
Bids will be received by the Board of Public Affairs of Barnesville on April 27 for about 1,500 tons of three-quarter screened or forked coal, Pittsburgh No. 8 vein, for the Water Works Department, to cover the period from May 15, 1926, to May 15, 1927.

At the annual stockholders' meeting of the Hocking Valley Railway Co., held April 6, W. J. Harahan, Richmond, Va., K. D. Steere, Cleveland, and Willis D. Wood, New York, were elected directors to serve until April, 1929. Other directors continued in office. Routine business only was transacted.

PENNSYLVANIA

Reading Revenues Unhurt by Strike.—In his annual report as president of the Reading Company, A. T. Dice stated that the recent anthracite strike did not curtail the revenues of the company. On the contrary, due to the diversified business the company actually enjoyed an increase in traffic, much of the loss from anthracite movement being offset by the movement of bituminous coal and coke. Prior to 1897 about half of the road's entire tonnage consisted of hard coal, and a strike in those days almost meant disaster. Now this is all changed, for whereas in 1895 anthracite constituted 55 per cent of the tonnage, fifteen years later it was only 38 per cent of the total, and two years ago it was 21 per cent. During the past year it was only 18 per cent.

Ship to Test Pulverized Fuel.—Under the auspices of the Navy Department tests are being arranged for at the Philadelphia Navy Yard, at League Island, of the use of pulverized fuel on merchant ships. A plant already has been set up at the yard and devices which have been developed by several manufacturers are to be tried out. It



Mine No. 261, Consolidation Coal Co., Caretta, McDowell County, W. Va.

A group of company houses with the mine plant in the background. To date the coal is still being hoisted through the auxiliary shaft. The permanent tippie and screening plant is now being completed. In the foreground of the photograph is concrete-surfaced state road No. 66.

is asserted that, if necessary, a crusher can be erected on board ship to pulverize low-grade coals, and this powdered fuel can be utilized in oil-burner installations.

Seven employees of the Bethlehem Mines Corp. at Heilwood, have been granted certificates upon graduating from the two-year course of mine instruction sponsored by the Vocational Education Board in co-operation with the School of Mines of Pennsylvania State College. The successful students, all of Heilwood, are Charles Covalesky, Eugene Croyle, Fred Haas, Ralph Muffley, Michael W. Thomas, W. T. Trinkley, and Blair Muffley. The certificates were presented by W. G. Duncan, associate professor of industrial education of Pennsylvania State College. Blair Muffley was the instructor of the class.

At the Royal Mine of W. J. Rainey, Inc., at Royal, Fayette County, which closed down three weeks ago for electrification, the installation of the electric hoist and haulage system has been finished and operation resumed. Some electric pumps are still being installed.

More than 400 acres of coal land in Hamilton County Ohio, owned by the Harmon Creek Coal Co., in which John A. Bell was a heavy stockholder, were held to be within the terms of a mortgage issued to the Colonial Trust Co. in an opinion filed last week in common pleas court at Pittsburgh by Judge John D. Shafer. The trust company brought suit against the coal company, asking the court to order the directors of the latter company to make a deed for the Ohio coal land so as to include it within a mortgage executed on June 18, 1917, when \$1,500,000 of bonds were issued.

Pittsburgh Terminal Profits — First-quarter earnings of the Pittsburgh Terminal Coal Corp. were between \$125,000 and \$150,000 after all charges, but before federal income taxes. Last year there was a net loss of \$97,000. Production of 379,000 tons in March of this year compares with 223,000 last year. The company is well sold ahead,

practically all of its contracts expiring April 1 having been renewed for another year.

Bituminous coal (revenue) transported by the Reading Co. during February, 1926, totaled 2,489,400 gross tons, compared with 1,659,753 tons in the corresponding month of 1925.

Open-shop miners of the Pittsburgh Coal Co., loaded a higher coal tonnage at 10 mines in the Pittsburgh district April 7, than in any single day since operations were resumed last August, independent of the United Mine Workers, the company reported. The total was 7,084 tons. The company passed the 2,000 mark in the number of men working under the November, 1917, wage scale, for the first time when 2,106 men reported for work.

Many Mines Idle.—Of the 643 coal mines on the Pennsylvania R.R. in the central Pennsylvania field 370 were idle last week, 49 working one day a week; 63 two days; 58 three days; 33 four days; 27 five days; 42 six days. Loadings for the week ending April 3, totaled 11,723 cars, as against 14,631 for the preceding week. March loadings were 70,245 cars, as against 82,648 in February.

The Century Coke Co., near Brownsville, has closed down, as has the Mt. Sterling plant of the Consolidated Coke Co. The Gray's Landing plants of the Consolidated Coke Co. and the plants of the Husted-Semans Coal & Coke Co. at East Middlesboro, both in Fayette County, are running very short time.

The Jones & Laughlin Steel Co., Pittsburgh, will start work at once on the construction of ten gondola type barges for the Vesta Coal Co., one of its subsidiaries. They will be used in carrying coal from the mines to the mills and to ship steel to Southern ports.

John A. Bell, Carnegie banker and coal operator, under sentence for embezzlement, who suffered a stroke March 26, was reported little improved last week. This is the second stroke Bell has suffered since his business

affairs got him into difficulties. Last summer a stroke paralyzed his left side. Bell, who is 72 years old, was sentenced Feb. 1 to six and one-half years in the county jail for embezzlement in connection with the conduct of the Carnegie bank. He is out on bond while his appeal to the state Superior Court is being considered.

Cosgrove-Meehan Earns \$162,839

Net earnings of the Cosgrove-Meehan Coal Co., of Johnstown, Pa., reported for 1925, were \$162,839.27, after all charges, including preferred dividends, but before federal taxes, or 68c. per share on 239,467 shares of no par common stock. Total assets were \$12,727,065.45, including current assets of \$1,947,462.02, and fixed assets of \$10,375,406.70. Deferred charges and prepaid expenses totaled \$404,196.73.

The suit of the Hercules Cement Co., of Philadelphia, against Hall Bros. & Co., Inc., of Baltimore, was tried in the Court of Common Pleas at Philadelphia, April 5. The plaintiff claimed about \$3,700 damages for non-shipment on an order for Fairmont coal to be supplied in April, 1922, during the strike of the United Mine Workers. The jury rendered a verdict in favor of the defendant.

UTAH

New Spur to Coal Region.—The Interstate Commerce Commission has authorized the Denver & Rio Grande Western R. R. to abandon the Kenilworth & Helper R. R., 3.75 miles long, in Carbon County, chief coal producing section of the state, and at the same time gave permission to construct a spur of 6.25 miles from Spring Canyon Junction eastward into a rich coal field now in part served by the road to be abandoned. It was stated that the old road was expensive because its grades are 6 per cent and more, while the new spur will have a maximum grade of but 3 per cent westward and 1.5 per cent eastward. Construction will start at once and it is expected that the new line will be ready for use Oct. 1. It will serve a new mine to be opened soon by the Independent Coal & Coke Co. and at the same time will continue to serve that company's present mine. It is said the new spur will take care of 600,000 tons of coal the first year of its operation, increasing within five years to a million tons. The construction of the spur will involve an outlay of \$469,000.

VIRGINIA

The name of the Blue Diamond Coal Co. has been changed to the Bonnie Blue Coal Co., with headquarters at Diamond. James Dupup is the general manager. This company is owned by H. C. Williams and associates of Middlesboro.

The average weekly production of coal in the Virginia field for eleven weeks of the calendar year 1926, end on March 13, was 233,800 tons, representing about 90 per cent of the producing capacity of the field. Out of a total of 156 mines in the field 75 were idle and 81 active. Production to the

end of the second week of March this year was 2,572,400 tons, against 2,157,000 tons in 1925 and 1,934,000 tons in 1924.

WEST VIRGINIA

The Talbot-Chambers Coal Co., 1708 Union Trust Building, Cleveland, recently filed a certificate at the office of the Secretary of State, in Charleston, which shows that the name of the corporation has been changed to the Dragon Coal Co.

In order to make improvements the Fordson Coal Co. has suspended operations at Nuttallburg for a few weeks. The company is engaged in installing a new retarding conveyor which will reduce breakage in loading coal into the cars.

Col. T. E. Houston, with interests along the Norfolk & Western, and Capt. R. R. Smith, of the R. R. Smith Coal Co., of Huntington, operating mines in the Logan and Pocahontas fields and the Elkhorn field of Kentucky, have become interested in the transportation of coal by water down the Ohio River and have acquired a frontage on the river at Kenova for the purpose of installing river loading equipment.

The Whiteley Creek Coal Co., of Monongalia County has surrendered its charter at the office of the Secretary of State in Charleston.

The Farley Coal Co. has changed its plan of capitalization from 3,000 shares of common stock to 2,000 shares of preferred stock at \$100 and 4,000 shares of common stock at \$1 a share, reducing its total capitalization from \$300,000 to \$204,000.

The Meadow Creek Coal Co. has increased its total capitalization from \$200,000 to \$400,000.

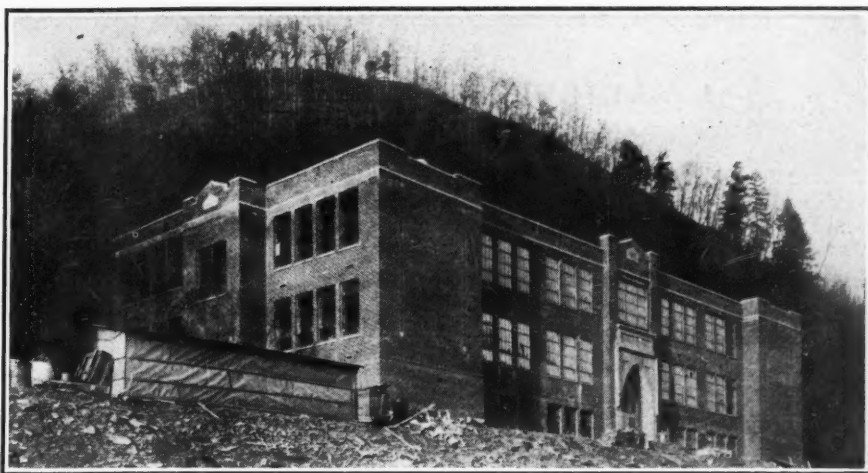
A petition in voluntary bankruptcy was filed last week in the office of the U. S. deputy court clerk at Huntington by the Kentucky Elkhorn By-Products Coal Co., of Huntington. Thomas F. Bailey, vice-president of the company, appeared as the petitioner. Assets are listed at \$124,106.25 and liabilities at \$144,649.17.

The Buckeye Coal Mining Co., Warren, Ohio, a West Virginia corporation, was dissolved and surrendered its charter at the office of the Secretary of State in Charleston April 1.

The United States Coal & Coke Co., operating in the McDowell County field, has announced in a safety bulletin that there has not been a single fatal accident at Gary within the last four months and that during those four months the company mined 1,300,531 tons of coal.

The Wentz Corporation, Philadelphia, Pa., a West Virginia corporation, recently filed amendments to its charter at the office of the Secretary of State in Charleston.

The state Department of Mines last week issued certificates for mine rescue and first aid work to 10 seniors in the mining engineering school of West Virginia University, at Morgantown. Those who received certificates were Harry G. Kennedy, Percy H. Gillie, C. A. Ray, Russell W. King and Patrick D. McMurrer, all of Charles-



New High School at Coalwood, W. Va.

Approximately \$100,000 is being expended on this building, erected on property of the Consolidation Coal Co., in McDowell County. Besides the usual complement of recitation rooms there is included a combination gymnasium and auditorium seating 550, a chemical laboratory, physical laboratory, study hall, library, teachers' rest room, and so forth. Nothing is lacking to make the high school all that is to be desired. Among the special courses are domestic art, domestic science, and manual training.

ton; Iva A. Given, Sutton; R. W. Wotring, Morgantown; G. E. Fish, Buckhannon; N. R. McGinnis, Fairmont, and C. H. Farmer, Bolt. The training was given recently at the University by state mine department officials.

Information has been received by the state Department of Mines, in Charleston, that the seals over mine No. 63 of the Consolidation Coal Co., at Monongah, which has been afire, were removed last week. There is considerable fire apparent, but this will be fought direct, according to reports.

The estate of the late W. M. Puckett, president of the Cabin Creek Consolidated Coal Co., is valued at \$114,628.80, according to a report filed in Charleston March 23 by appraisers. He owned 952 shares of Cabin Creek Consolidated Coal Co., which is valued at \$95,200.

Because of the large number of bidders and inability to inspect all of the mines, the Chesapeake & Ohio Ry. has deferred letting coal contracts until May 1.

The Stover Coal Co., located at South Nuttall, Fayette County, has closed down its mine temporarily.

The Consolidation Coal Co. has rockdusted its Carolina mine, on the Western Maryland Ry. in Marion County, according to reports received by the state Department of Mines.

Recently on Keeney's Creek in the Lookout section, oil drillers reached a new coal seam 500 ft. below the measure now being worked there. It means a new development in these coal fields, it is reported.

Pocahontas Has Big Year.—Earnings of the Pocahontas Coal & Coke Co. in 1925, according to the annual report, were the largest in the company's history. Royalties on coal mined and coke manufactured were \$1,546,451.10 and other income was \$84,566.04, or total earnings of \$1,631,017.14, compared with \$1,410,581.45 in 1924. Operating expenses were \$158,357.06 and taxes \$185,837.65, leaving net earnings of \$1,286,822.43. The company neither

mines nor sells coal itself, being a land-owning company, all of whose capital stock is owned by the Norfolk & Western Ry.

Grant Town No. 1 and Lowesville No. 3 mines of the New England Fuel & Transportation Co., produced 132,000 tons of coal in March and established a new daily record on April 1 with an output of 5,100 tons.

In order to reduce the danger of explosions to a minimum, the Landstreet-Downey Coal Co., operating on the Rockhouse Fork of Pigeon Creek, in Mingo County, is having its mines rockdusted. The Leckie Colliery Co., operating near Williamson, also expects to rock-dust its mine, a spraying machine having been received.

The Marion Division of the Bethlehem Mines Corporation smashed all production records in March, when the mines at Dakota and Barrackville exceeded the former peak daily, weekly and monthly loadings. During March the Dakota mine loaded 114,032 tons in 27 working days, an average of 4,223 tons daily.

Engineers have begun the installation of a device in the Dakota mine of the Bethlehem Mines Corporation which is expected to prevent short-circuits in the air currents. The idea is said to be revolutionary, but as it has been worked out only theoretically, its success will not be known until it has been in actual use for some time. Company officials will not reveal details of the plan until it has been thoroughly tested.

CANADA

A new field of high-grade lignite has been found by William Woodend, who for the last few years has been slowly developing the Copsey mine, some forty-five miles south of Moose Jaw in the Ardill district, on the west bank of the Lake of the Rivers. It is estimated that the deposit will yield approximately 4,000 tons of fuel per acre, and the area of the coal, while yet undetermined, will be several square miles at least. The main seam is over 4 ft. thick and only 80 ft. below the surface.

Among the Coal Men

Joseph D. Zook, who for the last eight years has been vice-president of the Nason Coal Co. and has taken an active part in its management as well as of the Illinois Coal Corp., has joined the forces of the O'Gara Coal Co., Chicago, as vice-president, effective April 1. He also is a director of the Illinois Coal Operators' Association and has an enviable reputation in the industry.

L. E. Young, general manager of the Union Colliery Co., St. Louis, Mo., is kept pretty well on the jump between attending meetings of the scale committee of the Illinois operators, besides investigating recent developments in mine production costs, which take him all the way from St. Louis to Pittsburgh.

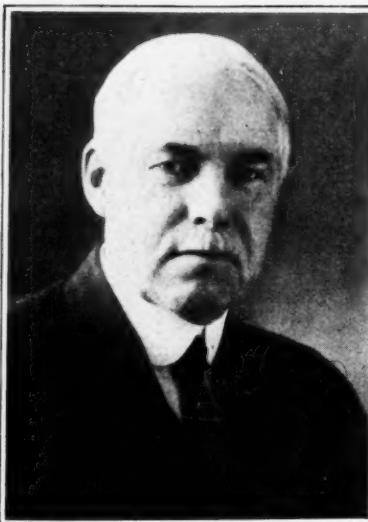
J. B. Marks, vice-president and assistant to President J. F. Welborn, was made a new Colorado Fuel & Iron Co. director at the annual meeting. Other directors, re-elected, are George B. Berger, Thomas M. Debevoise, Fred Farrar, William V. Hodges, S. G. Pierson, Albert A. Reed, M. D. Thatcher, E. H. Weitzel, J. F. Welborn, E. T. Wilson and Arthur Woods. Members of the executive committee who also were appointed are J. F. Welborn, Thomas M. Debevoise and Arthur Woods. The officers are J. F. Welborn, president; Arthur Woods, vice-president; J. B. Marks, vice-president and assistant to president, in charge of sales, traffic and purchases; E. H. Weitzel, vice-president and general manager; S. G. Pierson, vice-president and treasurer.

M. B. Mitchell has resigned as superintendent of the Bower mines of the West Virginia Coal & Coke Co. to become general superintendent of construction for the Fairmont Mining Machinery Co. Before going with the West Virginia Coal & Coke Co. Mr. Mitchell was for several years general superintendent of the Marion division of the Bethlehem Mines Corporation.

Stephen Downs, Lansford, Pa., fuel engineer for the Lehigh Coal & Navigation Co., delivered an address in the Chamber of Commerce Building, Philadelphia, on April 7 in the lecture course on "Combustion" being conducted by the Anthracite Economy Service. Mr. Downs detailed the methods of the campaign entered into by his company in Lansford, Allentown and Easton in its direct to the consumer plan of inducing the burning of anthracite buckwheat in household heating plants, with the results obtained. He also displayed types of grates used in the heaters of the consumers who gave the scheme a trial.

U. S. Senator Fred M. Sackett, one of Louisville's leading coal men, has returned to Louisville for three or four weeks, after some time spent in Washington. Mr. Sackett is an operator, jobber and retailer.

H. A. McAllister, who had been manager of mines of the Logan division of the West Virginia Coal & Coke Co., has been made manager of mines of the Thurmond Consolidated Coal Co.



P. & A. Photos.

Samuel W. Parr

In recognition of his distinguished achievements in chemical science, Samuel W. Parr, professor of applied science in the University of Illinois and one of America's greatest experts in the chemistry of coal, is the winner of the Chandler gold medal for 1926, it has been announced at Columbia University, New York City. Dr. Parr, known chiefly to Illinois people as the inventor of the Parr low-temperature coking process for coking Illinois coal, is well known nationally for other reasons. He perfected a new alloy, ilium, used in many ways as a substitute for platinum, although costing only a fraction as much. He has also presented the scientific world with many valuable instruments.

E. M. Showalter, of the Continental Coal Co., is ill with influenza at his home in Fairmont, W. Va.

Charles M. Paisley, treasurer of the Kelly's Creek Collieries Co., Charleston, W. Va., and Carl Scholz, vice-president and general manager of the Raleigh-Wyoming Coal Co., Charleston, are among the active spirits in the recently organized and chartered Charleston Business Men's Club.

Charles Whiting Baker, formerly editor of *Engineering News*, has become associated with Baker, Simonds & Co., Inc., investment bankers, 115 Broadway, New York.

Obituary

James A. Abraham of Sonterfield, Pa., died March 27 from a complication of diseases, aged 50. He formerly was employed by the Whyel Coke Co., of Uniontown, as a superintendent for one of the Whyel plants for a number of years.

W. L. Malone, of Philippi, W. Va., World War veteran and coal operator, passed away April 2 at a hospital in Clarksburg, W. Va., following a five

weeks' illness. Mr. Malone was well known in the Barbour County coal field and in adjacent coal territory, having been engaged in the coal business for several years.

William Henry Brasfield, a pioneer developer and owner of coal properties in Walker and Jefferson counties, Alabama, died at his home near Burnwell, Walker County, March 26, at the age of 82 years. Mr. Brasfield was widely known in industrial circles in the Birmingham district. He is reported to have left a valuable estate.

Phillips W. Hoskins, an old resident of Birmingham, Ala., who claimed to have been the pioneer coal miner of the district, died in Nashville, Tenn., March 27 at the age of 91 years. Mr. Hoskins assisted in opening the McIllwain mines, near Birmingham, prior to the Civil War. He is survived by seven sons and one daughter.

Traffic News

New N. Y. Coke Rates Approved

The New York Public Service Commission has approved rates of the New York Central (East) on coke, coke breeze and coke dust from Geneva to Boston & Albany stations as follows: Brookview to Ghent, inclusive, \$3.02 (reduction 26c.); Pulvers, Mellenville, Claverack, East Chatham and Canaan, \$3.16 (reduction 15c.); Hudson Upper, \$3.15 (increase 25c.). Also rates from Solvay and Syracuse to these Boston & Albany stations: Canaan, Claverack, East Chatham, Ghent, Hudson Upper, Mellenville, Pulvers, \$2.90 per net ton (increase to Hudson Upper 38c. and to other points 13c. per net ton)—Effective April 20, 1926.

Hard-Coal Rates Attacked

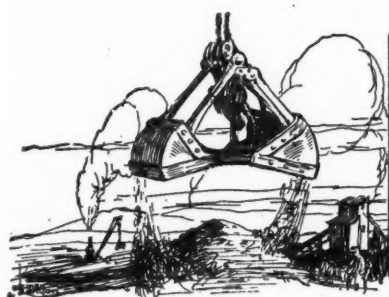
The Erie R.R. has filed a complaint with the Interstate Commerce Commission contending that the present division of rates on anthracite to points in Illinois beyond the Chicago switching district is unreasonable.

The Big Vein Anthracite Collieries, Inc., of McCoy, Va., has attacked rates on coal from McCoy to points in Pennsylvania, New York, Indiana, Illinois, Michigan, Missouri, Iowa, Wisconsin and Minnesota. Existing rates, it is declared, are unduly preferential to other mines located on the Virginian Ry.

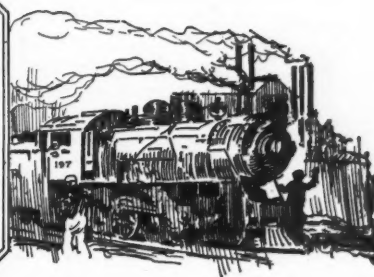
The Brackett Coal Co. has filed a complaint with the Interstate Commerce Commission against rates of \$4.54 per gross ton on anthracite and \$4.66 on prepared sizes from the anthracite region in Pennsylvania to Newton, Mass.

The Electric Service Co., of Dodge City, Kan., complains against rates of \$2.68 from Irma and \$4.41 from Dawson on carload shipments of coal to Dodge City.

The Illinois Coal Traffic Bureau has attacked the rates on coal from Illinois mines to points in the St. Louis switching district and has asked the Interstate Commerce Commission to consolidate its complaint with that of the Perry Coal Co.



Production And the Market



Coal Trade's Quest for Firm Basis Marked by Striking Territorial Contrasts

Efforts of the bituminous trade to reach solid ground for business in the new coal year are marked by sharp territorial differences in conditions. These are particularly noticeable in the steam-coal contract situation. In Illinois and Indiana, for example, industrial consumers have abandoned their attitude of indifference. Many of the agreements now being signed give the shipper the option of supplying non-union coal if union mines are closed down. The Birmingham district also reports activity in contract renewals at higher prices.

Along the Atlantic seaboard, on the other hand, contracting is backward. What business is closed is closed so quietly that it has no effect upon the market. Distress tonnage still blocks the attempts of Eastern producers to persuade buyers to sign up agreements at prices that will not mean a loss to the shipper. The record in the Southwest and in Rocky Mountain territory is no more encouraging. And railroad renewals are an uncertain quantity in all districts.

The situation in the Eastern fields is further complicated by the backwardness in the lake season. Some tonnage has been loaded at the lower ports, but no vessels have cleared. Congestion between the mines and the docks at Sandusky and Toledo has forced the railroads to embargo further shipments until the blockade has been broken. This means that the great safety valve for the Appalachian Region at this season of the year is somewhat choked.

Downward Movement of Prices Continues

Under such conditions, and with production still above the seasonal averages for the two preceding years, it is hardly surprising that the downward trend in spot prices continues unchecked. *Coal Age* Index on April 12 stood at 158 and the corresponding price was

\$1.91. Losses were registered by Eastern coals generally; even slack, which was stronger in some markets, did not wholly escape. The greatest stability in prices was shown in the Middle West.

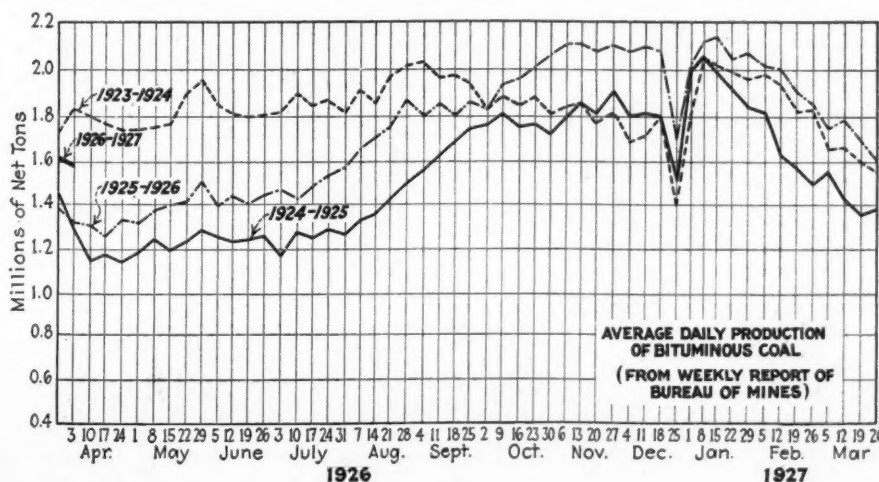
Notwithstanding the holidays, bituminous production the week ended April 3 was estimated at 9,034,000 net tons by the Bureau of Mines. This was 592,000 tons less than in the preceding week. Most of this decline was due to the observance of Mitchell Day in the union fields. Contrary to past performance, output on Good Friday and Easter Saturday was ahead of the preceding week. Loadings on Easter Monday were less than 12 per cent under those for March 29.

Criticize Anthracite Price Policy

The larger anthracite producers are meeting no difficulty in effecting a prompt disposition of their output of domestic sizes. Retail distributors, however, do not try to conceal their disappointment over the failure of the operators to make the old-time spring reductions. They also find that this failure is bitterly resented by some householders who are now withholding fill-up orders. In some cases the retailers themselves have cut their prices to induce consumer storing.

Independent tonnage at high premiums is finding hard sledding. Not only does the retailer refuse to pay over 50 or 75c. premium, but he is becoming more discriminating in the sizes he will accept. Chestnut still leads in demand. Egg and stove are struggling for second place in New York, but egg is less popular in Philadelphia. Complaint continues that pea is scarce. The steam sizes are easy and prices are being shaded to move tonnage which cannot be put in storage.

The spot market in Connellsville coke is close to stagnation, but production is being closely regulated.



Estimates of Production

(Net Tons)		
BITUMINOUS		
	1926	1925
March 20.....	10,263,000	8,283,000
March 27 (a).....	9,626,000	8,353,000
April 3 (b).....	9,034,000	7,547,000
Daily average.....	1,593,000	1,348,000
Cal. yr. to date..... (c)	150,311,000	131,001,000
Daily av. to date....	1,906,000	1,662,000
ANTHRACITE		
March 20.....	1,963,000	1,513,000
March 27.....	1,991,000	1,640,000
April 3.....	1,549,000	1,438,000
Cal. yr. to date.... (c)	11,510,000	22,387,000
BEEHIVE COKE		
March 27.....	250,000	220,000
April 3.....	234,000	220,000
Cal. yr. to date.... (c)	4,056,000	3,335,000

(a) Revised since last report. (b) Subject to revision. (c) Adjusted to equalize number of days in the two years.

Interest in Contracts Revives

Renewed interest on the part of purchasing agents for big industrial consumers is leading to more contract renewals in the Middle West. The uncertain outlook for the last year of the Jacksonville agreement in the union fields has made buyers less cocksure of the open market. Many Illinois and Indiana operators are writing contracts which give them the option of shipping western Kentucky coal if their own output is shut off. Railroad fuel agents, however, still pursue a policy of watchful waiting.

Broken running time is the rule in the mining fields. Steam coal is the backbone of the present movement. The rush-order business in domestic sizes, due to the blizzards, has subsided. Two to three days a week is the average for southern Illinois proper. Mt. Olive and Belleville are in worse shape and Indiana and central Illinois also find it difficult to keep up production. The ubiquitous "no bill" is no snob.

The end of the storm flurry hit Eastern coals as hard as the Illinois and Indiana sizes. Chicago territory has been absorbing much less West Virginia and eastern Kentucky offerings. Anthracite, on the other hand, has been freely accepted. In St. Louis the prospects of early consumer buying of either anthracite or smokeless coals are slight. The principal demand in that market has been for Mt. Olive and Standard district coals.

Kentucky Movement Slowing Down

Prepared sizes of Kentucky coals were easier last week. Weather demand had lightened and, in the eastern part of the state, the lake movement had not begun to have any effect upon the market. At the same time, commitments on fine coal forced screening. All of these factors worked toward a weakening in the prices on the prepared sizes—particularly in the western district. Screenings were stronger. Western Kentucky block was \$1.65@1.85; lump and egg,

\$1.40@1.65; nut, \$1.35@1.60; mine-run, \$1.15@1.35; screenings, 90c.@1.15. Eastern Kentucky block was held at \$1.85@2.25; lump, egg and nut, \$1.75@2; mine-run, \$1.50@1.60; slack, \$1@1.10.

Considering the season of the year, however, the Kentucky situation is unusually good. Operators in the eastern part of the state expect to participate heavily in the lake movement. The recent sales agreements with Illinois operators lead western Kentucky producers to look forward to a substantial movement of their coal to the Middle West and Northwest. Some railroad business has been closed, it is reported, around \$1.50, mine-run basis.

Operations at some of the docks at the Head of the Lakes again are on a part-time basis. March loadings were 14,836 cars, as compared with 16,388 cars a year ago. A reduction of stocks to 2,000,000 tons by the opening of navigation is the goal set by the dock men at Superior and Duluth. The first

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

Low-Volatile, Eastern		Market Quoted	Apr. 13, 1925	Mar. 29, 1926	Apr. 5, 1926	Apr. 12, 1926†
Smokeless lump.....	Columbus....	\$2.85	\$3.10	\$2.85	\$2.75@3.00	
Smokeless mine run.....	Columbus....	1.85	2.00	1.95	1.85@2.00	
Smokeless screenings.....	Columbus....	1.30	1.15	1.15	1.00@1.25	
Smokeless lump.....	Chicago....	2.85	2.60	2.60	2.50@2.75	
Smokeless mine run.....	Chicago....	1.85	1.85	1.85	1.65@2.00	
Smokeless lump.....	Cincinnati....	2.60	2.10	2.00	1.85@2.00	
Smokeless mine run.....	Cincinnati....	2.00	2.10	2.00	1.25@1.50	
Smokeless screenings.....	Cincinnati....	1.50	1.35	1.35	1.25@1.50	
Smokeless mine run.....	Boston....	4.35	4.25	4.15	4.10@4.35	
Clearfield mine run.....	Boston....	1.95	1.95	1.85	1.75@2.00	
Cambria mine run.....	Boston....	2.25	2.15	2.15	2.00@2.25	
Somerset mine run.....	Boston....	2.10	2.00	2.00	1.80@2.10	
Pool 1 (Navy Standard).....	New York....	2.60	2.75	2.70	2.50@2.85	
Pool 1 (Navy Standard).....	Philadelphia....	2.65	2.80	2.80	2.65@3.00	
Pool 1 (Navy Standard).....	Baltimore....	2.10	2.05	2.05	2.00@2.10	
Pool 9 (Super. Low Vol.).....	New York....	2.05	2.30	2.25	2.15@2.35	
Pool 9 (Super. Low Vol.).....	Philadelphia....	2.00	2.35	2.35	2.20@2.50	
Pool 9 (Super. Low Vol.).....	Baltimore....	1.90	1.90	1.90	1.85@1.95	
Pool 10 (H.Gr.Low Vol.).....	New York....	1.80	1.95	1.85	1.70@2.00	
Pool 10 (H.Gr.Low Vol.).....	Philadelphia....	1.65	2.05	2.05	1.90@2.25	
Pool 10 (H.Gr.Low Vol.).....	Baltimore....	1.75	1.75	1.75	1.70@1.80	
Pool 11 (Low Vol.).....	New York....	1.55	1.70	1.65	1.60@1.80	
Pool 11 (Low Vol.).....	Philadelphia....	1.55	1.80	1.70	1.55@1.85	
Pool 11 (Low Vol.).....	Baltimore....	1.50	1.60	1.60	1.60@1.65	
High-Volatile, Eastern		Market Quoted	Apr. 13, 1925	Mar. 29, 1926	Apr. 5, 1926	Apr. 12, 1926†
Pool 54-64 (Gas and St.).....	New York....	1.45	1.45	1.45	1.35@1.55	
Pool 54-64 (Gas and St.).....	Philadelphia....	1.45	1.45	1.45	1.35@1.55	
Pool 54-64 (Gas and St.).....	Baltimore....	1.70	1.30	1.30	1.30@1.35	
Pittsburgh sc'd gas.....	Pittsburgh....	2.40	2.45	2.40	2.35@2.50	
Pittsburgh gas mine run.....	Pittsburgh....	2.00	2.05	2.05	2.00@2.15	
Pittsburgh mine run (St.).....	Pittsburgh....	1.80	2.00	1.95	1.90@2.00	
Pittsburgh slack (Gas).....	Pittsburgh....	1.65	1.45	1.55	1.50@1.60	
Kanawha lump.....	Columbus....	2.10	2.10	2.05	1.85@2.25	
Kanawha mine run.....	Columbus....	1.40	1.55	1.55	1.40@1.70	
Kanawha screenings.....	Columbus....	1.10	.85	1.10	.75@.95	
W. Va. lump.....	Cincinnati....	2.00	1.85	1.85	1.75@2.00	
W. Va. gas mine run.....	Cincinnati....	1.30	1.40	1.50	1.40@1.50	
W. Va. steam mine run.....	Cincinnati....	1.25	1.35	1.40	1.25@1.40	
W. Va. screenings.....	Cincinnati....	1.10	.85	.90	.90@1.10	
Hooking lump.....	Columbus....	2.25	2.35	2.35	2.25@2.50	
Hooking mine run.....	Columbus....	1.40	1.50	1.55	1.40@1.70	
Hooking screenings.....	Columbus....	1.15	1.05	1.10	1.00@1.15	
Pitts. No. 8 lump.....	Cleveland....	2.30	2.25	2.25	1.85@2.60	
Pitts. No. 8 mine run.....	Cleveland....	1.75	1.85	1.85	1.80@1.85	
Pitts. No. 8 screenings.....	Cleveland....	1.40	1.40	1.55	1.55@1.65	
Midwest		Market Quoted	Apr. 13, 1925	Mar. 29, 1926	Apr. 5, 1926	Apr. 12, 1926†
Franklin, Ill. lump.....	Chicago....	\$2.60	\$3.00	\$2.60	\$2.60	
Franklin, Ill. mine run.....	Chicago....	2.35	2.40	2.40	2.35@2.50	
Franklin, Ill. screenings.....	Chicago....	2.10	1.90	1.85	1.75@2.00	
Central, Ill. lump.....	Chicago....	2.35	2.35	2.30	2.25@2.40	
Central, Ill. mine run.....	Chicago....	2.10	2.10	2.05	2.00@2.10	
Central, Ill. screenings.....	Chicago....	1.90	1.40	1.30	1.25@1.40	
Ind. 4th Vein lump.....	Chicago....	2.85	2.75	2.40	2.25@2.60	
Ind. 4th Vein mine run.....	Chicago....	2.10	2.15	2.15	2.10@2.25	
Ind. 4th Vein screenings.....	Chicago....	2.05	1.70	1.70	1.65@1.75	
Ind. 5th Vein lump.....	Chicago....	2.10	2.15	2.15	2.00@2.35	
Ind. 5th Vein mine run.....	Chicago....	1.90	1.95	1.95	1.85@2.10	
Ind. 5th Vein screenings.....	Chicago....	1.50	1.30	1.30	1.25@1.35	
Mt. Olive lump.....	St. Louis....	2.50	2.75	2.50	2.50	
Mt. Olive mine run.....	St. Louis....	2.25	2.15	2.15	2.15	
Mt. Olive screenings.....	St. Louis....	1.75	1.40	1.40	1.40	
Standard lump.....	St. Louis....	2.25	2.50	2.50	2.50	
Standard mine run.....	St. Louis....	1.80	1.80	1.80	1.75@1.85	
Standard screenings.....	St. Louis....	1.70	1.15	1.15	1.15@1.20	
West Ky. block.....	Louisville....	1.85	1.85	1.85	1.65@1.85	
West Ky. mine run.....	Louisville....	1.35	1.30	1.30	1.15@1.35	
West Ky. screenings.....	Louisville....	1.25	.95	1.00	.90@1.15	
West Ky. block.....	Chicago....	1.85	1.75	1.75	1.65@1.85	
West Ky. mine run.....	Chicago....	1.30	1.15	1.15	.85@1.50	
South and Southwest		Market Quoted	Apr. 13, 1925	Mar. 29, 1926	Apr. 5, 1926	Apr. 12, 1926†
Big Seam lump.....	Birmingham..	2.25	2.00	2.00	1.75@2.25	
Big Seam mine run.....	Birmingham..	1.75	2.00	2.00	1.75@2.25	
Big Seam (washed).....	Birmingham..	1.85	2.25	2.25	1.75@2.25	
S. E. Ky. block.....	Chicago....	2.10	2.35	2.25	2.00@2.50	
S. E. Ky. mine run.....	Chicago....	1.55	1.65	1.65	1.50@1.85	
S. E. Ky. block.....	Louisville....	2.00	2.00	2.00	1.85@2.25	
S. E. Ky. mine run.....	Louisville....	1.35	1.50	1.55	1.50@1.60	
S. E. Ky. screenings.....	Louisville....	1.10	1.00	1.00	1.00@1.10	
S. E. Ky. block.....	Cincinnati....	2.00	2.10	2.10	2.00@2.25	
S. E. Ky. mine run.....	Cincinnati....	1.30	1.50	1.50	1.25@1.65	
S. E. Ky. screenings.....	Cincinnati....	1.10	.90	.95	.90@1.15	
Kansas lump.....	Kansas City..	4.25	4.35	4.35	4.00@4.50	
Kansas mine run.....	Kansas City..	2.85	2.85	2.75	2.75@3.00	
Kansas screenings.....	Kansas City..	2.75	2.50	2.50	2.50	

* Gross tons, f.o.b. vessel, Hampton Roads.

† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

		Market Quoted	Freight Rates	April 13, 1925		April 5, 1926		April 12, 1926†	
				Independent	Company	Independent	Company	Independent	Company
Broken.....	New York....	\$2.34			\$8.00@8.50		\$8.15@9.25		\$8.15@9.25
Broken.....	Philadelphia....	2.39			9.15		9.00@9.25		9.00@9.25
Egg.....	New York....	2.34		\$8.25@8.50	8.25@8.50	9.50@10.25	8.75@9.25	9.25@10.25	8.75@9.25
Egg.....	Philadelphia....	2.39		8.50@9.20	8.30@8.50	9.25@9.90	9.15@9.25	9.25@9.85	9.15@9.25
Egg.....	Chicago....	5.06		7.76@8.40	7.42@8.08	8.75	8.13	8.75	8.13
Stove.....	New York....	2.34		8.50@9.75	8.50@8.90	9.50@10.25	9.25@9.50	9.25@10.25	9.25@9.50
Stove.....	Philadelphia....	2.39		9.10@9.55	8.75@8.90	9.60@10.00	9.35@9.50	9.60@10.10	9.35@9.50
Stove.....	Chicago....	5.06		8.12@8.50	7.82@8.00	8.88	8.58	8.88	8.58
Chestnut.....	New York....	2.34		8.25@8.75	8.25@8.50	9.50@10.25	8.75@9.15	9.25@10.25	8.75@9.15
Chestnut.....	Philadelphia....	2.39		8.50@9.35	8.40@8.50	9.25@10.25	9.00@9.15	9.25@9.75	9.00@9.15
Chestnut.....	Chicago....	5.06		7.94@8.25	7.59@8.00	8.88	8.33@8.53	8.88	8.33@8.53
Pea.....	New York....	2.22		4.25@5.00	5.00@5.50	6.50@7.50	6.00@6.35	6.25@7.50	6.00@6.35
Pea.....	Philadelphia....	2.14		5.00@5.75	5.25@5.30	6.50@7.00	6.00@6.50	6.50@7.00	6.00@6.50
Pea.....	Chicago....	4.79		4.91@5.36	4.69@5.00	5.65	5.65@5.80	5.65	5.65@5.80
Buckwheat No. 1.....	New York....	2.22		2.00@2.50	2.50@3.00	2.10@2.60	3.00@3.50	2.00@2.50	3.00@3.50
Buckwheat No. 1.....	Philadelphia....	2.14		2.00@2.25	2.50	2.50@3.00	3.00	2.50@2.75	3.00
Rice.....	New York....	2.22		1.75@2.00	2.00	1.50@2.00	2.00@2.25	1.50@2.00	2.00@2.25
Barley.....	Philadelphia....	2.14		1.35@1.50	1.50	1.30@1.50	1.60@1.75	1.25@1.50	1.60@1.75
Barley.....	New York....	2.22		1.50	1.50	1.50@1.60	1.75	1.50@1.60	1.75
Birdseye.....	New York....	2.22		1.40@1.60	1.60	1.60@1.75	2.00	1.60@1.75	2.00

* Net tons, f.o.b. mines. † Advances over previous week shown in heavy type; declines in italics.

arrivals of coal from the East are not expected much before May 1. Current retail buying is on a hand-to-mouth basis. Industrial buying is well sustained.

Domestic Call for Dock Coal Softer

Demand for fuel for domestic use at Milwaukee has fallen off sharply with the return of milder weather. Industrial requirements, however, are normal for this season of the year and little out of the ordinary is promised in steam buying for some time to come. Prices are unchanged. Aside from a tag-end business in the retail division of the trade, the market at the Twin Cities has been featureless. In the steam section, buyers again are dictating the terms of sale, although price levels have shown no violent reactions in the past few weeks.

The accumulation of orders brought about by the reappearance of winter conditions in the Southwest late in March kept most of the Kansas mines still working fairly busy last week. These orders, however, were not an unmixed blessing. Although they cleaned up the "no bills" of prepared sizes, they also resulted in a slight surplus of screenings. Prices on fine coal, however, were nominally unchanged. In Arkansas and Oklahoma there was little activity. April storage prices of \$5 on Paris (Ark.) lump, \$5.25 on McAlester and \$4.50 on Wilburton lump were announced last Friday.

Colorado, too, benefited by the weather demand, which quickly absorbed the unbilled loads. These latter, estimated at between 500 and 600 cars, were proving a serious menace to continued operations. In some cases, the mines were compelled to work extra shifts to catch up with rush orders. Utah also reported a better demand for lump and stove than for several weeks past. Steam coals, however, were draggy. Prices at Salt Lake City were firm, despite the recent reductions by the C.O.D. distributors of fuel.

Smokeless Prices Slump Unchecked

Attempts to check the downward movement in prices in the Cincinnati market are meeting with scant success. Prepared sizes of smokeless were pounded again last week, forcing some lump down to \$2.50, although one producer is sold up for the month at \$3. Egg also weakened and nut dropped to \$2. Some sales of mine-run were shaded 15c. under the \$2 base. Slack he'd firmly at \$1.25@1.50.

The high-volatile coals withstood the onslaught against prices better than the smokeless grades. Quotations already are on such low levels that few producers are willing to make further reductions. This policy has actually increased spot prices on slack 10c. Coal movement through the Cincinnati gateways last week was 8,893 cars, or 2,543 cars less than in the preceding week, but 1,971 cars more than a year ago.

Even these figures indicate that production still is too far ahead of demand to support profitable prices. The late opening of the lake season also is having a depressing effect upon spot quotations and contributes materially to the underlying weakness. Local retail business at Cincinnati jogs along un-

changed. High waters have hampered river movement.

Contract Situation Still Unsettled

The steam-coal contract situation in central Ohio is still very much unsettled. Most of the larger consumers are buying in the open market. No decision has been announced on railroad business and some of the carriers are taking in supplies on a 30-day basis. The spot market is fairly active, with screenings stronger because of reduced lump output. Retailers are buying only for immediate requirements.

Embargoes on shipments to Sandusky and Toledo have blocked lake movement. There are several thousand loads between Toledo and the mines and the yards have been badly congested. It is not expected that boats will begin to clear the lower ports much before May 1. Some lake business has been closed around \$1.50, mine-run. Southern Ohio, which will share little in lake business this year, is producing about 17 per cent of capacity.

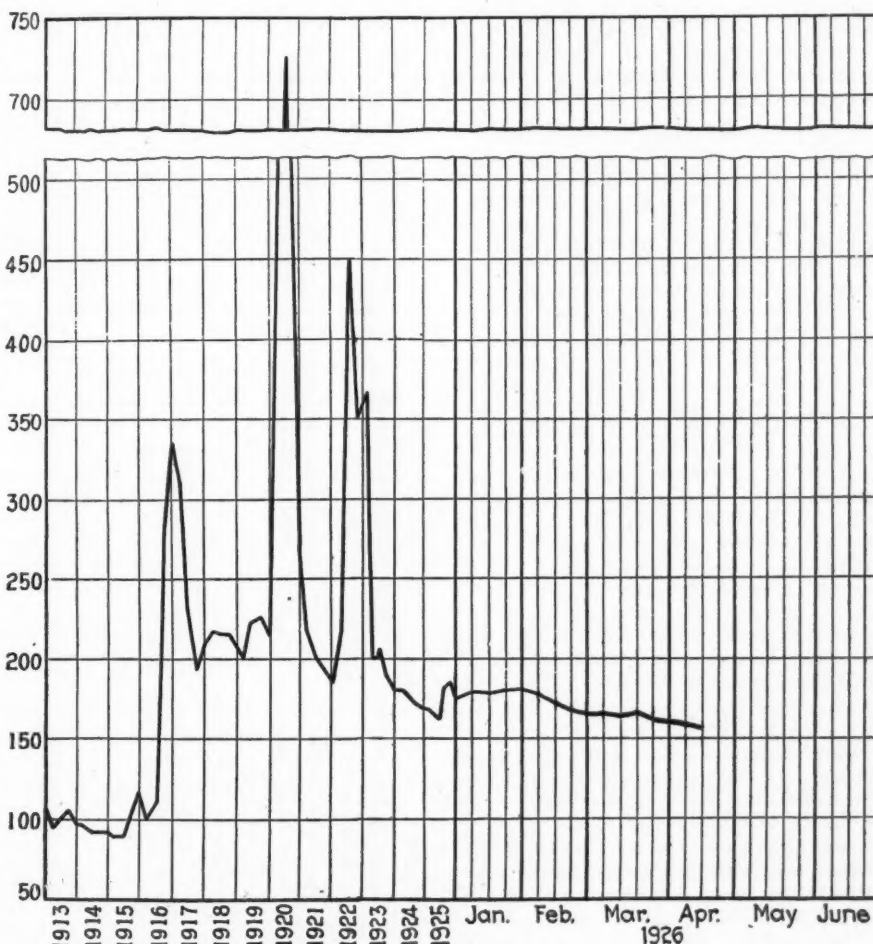
Eastern Ohio output during the week ended April 3 approximated 191,000 tons, or 32.7 per cent of capacity, as compared with 217,000 tons the preceding week and 200,000 tons a year ago.

The outstanding feature of the Cleveland market is the growing strength in nut-and-slack and slack quotations, which have increased 5 to 10c. per ton in the past week. Other sizes are dull. New additions are being made to the list of idle mines.

Union Blight on Pittsburgh District

The pessimism which descended upon the Pittsburgh district several weeks ago is unrelieved. Prices are unchanged because the volume of spot trading is so small. Less than 25 per cent of the normal commercial output of the district is being produced and a great part of that tonnage is credited to operations which have broken away from the union scale carried in the Jacksonville agreement.

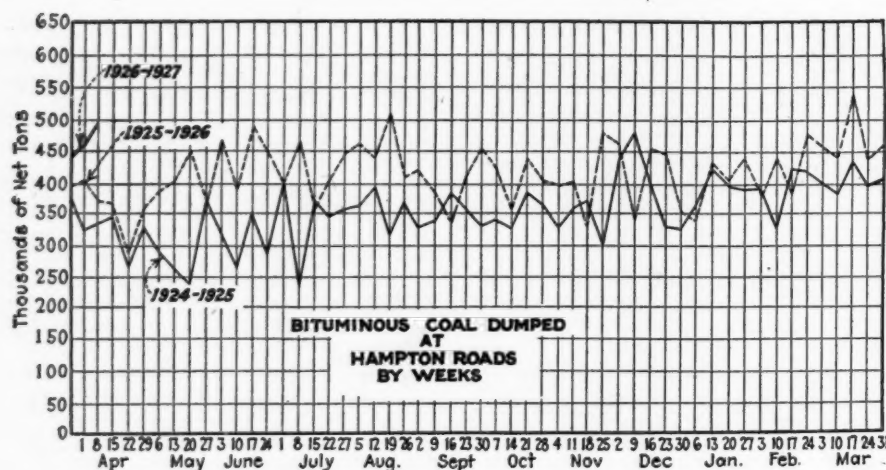
Central Pennsylvania has settled down for a period of idleness. By far the greater number of the mines in the district are either down completely or working only a few days a week. Pool 1 coal is quoted at \$2.75@2.85; pool 71, \$2.60@2.75; pool 9, \$2.40@2.50; pool 10, \$1.85@2; pool 11, \$1.70@1.85; pool 18, \$1.60@1.65. These quotations are 25 to 40c. higher than those of the preceding week on pools 1, 9 and 71 and 5 to 15c. higher on the other pools.



Coal Age Index of Spot Prices of Bituminous Coal F.O.B. Mines

	1926	1925	1924
Index	Apr. 12 158	Apr. 5 160	Mar. 29 163
Weighted average price	Apr. 12 \$1.91	Apr. 5 \$1.93	Mar. 29 \$1.97
	Mar. 22 167	Apr. 13 161	Apr. 14 172
	Mar. 22 \$2.02	Apr. 13 \$1.95	Apr. 14 \$2.08

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States, weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average of the twelve months ended June 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke: 1913-1918," published by the Geological Survey and the War Industries Board.



The industrial market at Buffalo shows no improvement. Slack is somewhat scarce because there is little screening at the mines. Nominal quotations are: Fairmont lump, \$1.60@ \$1.75; mine-run, \$1.40@ \$1.50; slack, \$1.25@ \$1.40; Youghiogheny gas lump, \$2.15@ \$2.40; Pittsburgh and No. 8 steam lump, \$1.85@ \$2.10; slack, \$1.20@ \$1.50; Allegheny Valley mine-run, \$1.60@ \$1.85. In the domestic market the only serious contender against anthracite is coke. The weather has kept Toronto retailers busy. Stove is retailing at \$15.75; egg and nut, \$15.25, and pea, \$12.50.

New England Steam Horizon Dark

The New England steam-coal market is without favorable development. Prices are more or less nominal because spot buying is so scattered. In many cases large consumers are protected by unexpired contracts and have no interest in the spot market. Others are waiting for breaks before adding to their reserves. Salesmen are combing the territory for stray orders and are making many inducements to wean away buyers from accustomed sources of supply.

There is too much coal standing at the southern loading piers to make prices stable. The situation is further complicated by the small volume of tonnage sold in the spot market and by occasional offers of distress coal. Nominally the range on Navy Standard per gross ton f.o.b. vessel at Norfolk and Newport News is \$4.10@ \$4.35. Some No. 2 coal is to be had at less than \$4.

Inland Prices Weak

For inland delivery coal on cars at Boston and Providence is around \$5.50. The market is so uncertain that there is little attempt to force coal upon reluctant buyers. Central Pennsylvania coals show no appreciable change from conditions which have prevailed for over a month.

Improvement in the New York bituminous market is still held back by sales of distress tonnage. Last week it was reported that there were more than 250 boats anchored in the East River waiting for buyers. Enough distress tonnage has been cleaned up, however, to stiffen the resistance of shippers when buyers try to name their own prices. Contracting is not keeping pace with other years. During the

past week another cargo of foreign coke arrived. Domestic coke is slow at \$3.25@ \$3.75, ovens.

Philadelphia Market Dull

The Philadelphia spot market is as dull as that of New York. Sellers appear to have abandoned their efforts to force contracts on buyers and are letting the trade drift along on a day-to-day basis. With more mines closing down, the pressure of spot tonnage is lessening. Slack, in particular, is less freely offered and some large consumers are turning to mine-run.

Privately the policy of the railroads is being sharply criticized by the coal men. Some carriers have been endeavoring to establish a going price to be paid for coal on the basis at which they picked up distress tonnage after the end of the anthracite strike. These figures, say the producers, are so far below the cost of production that they are absurd. The Philadelphia tide trade is quiet.

Baltimore Situation Unchanged

The new coal year has brought none of the active contracting for steam and gas coals that once marked the advent of spring in the Baltimore bituminous market. The spot price range is so low that it discourages long-term orders and daily receipts negative any fear of a shortage in supply. On the export side there are faint signs of betterment. March exports were the largest in two years. During the first week of April 14,869 tons was loaded for foreign shipment.

Spot demand in the Birmingham field is less active, but continues to absorb all the free coal of medium and high grade offered. It is the lower grades that suffer, although accumulations have been kept down to a minimum. Little difficulty is being experienced in renewing steam coal contracts and, in most cases the prices show advances over those carried in the 1925-26 agreements. Contract movement, as a matter of fact, is taking care of the bulk of the current production.

There is very little demand for spot domestic coal because weather conditions do not encourage heavy consumption of fuel. Most of the high-grade coal, however, is sold ahead on contracts which will take the greater part of the output off the market for the next three or four months. White-ash coals are in disfavor with buyers. Movement of domestic coke also is slow, with egg and nut quoted at \$4.50@ \$5. Spot and contract foundry coke is firm at \$5.50@ \$6.50, ovens.

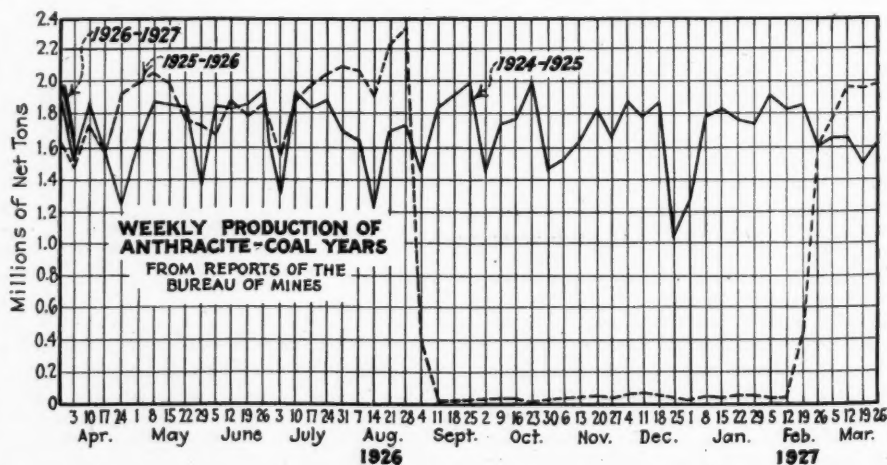
Company Anthracite Readily Absorbed

The New York trade is buying domestic company anthracite freely, but independent shippers are seldom able to book orders at premiums exceeding 75c. Consumer buying has dropped off and some of the tonnage now being received is going into storage at the dealers' yards. Chestnut still holds first place in demand, but stove and egg are running it a close race. Pea continues scarce. Steam sizes are slow. Some of the large shippers are contracting No. 1 buckwheat at \$2.50. Rice is holding its own, but some barley is going into mine storage.

On the whole, the anthracite situation in Philadelphia is a counterpart of that in New York. If there is any reluctance on the part of the retailers to take in domestic coal from company shippers it is shown in egg and, occasionally, in stove. Current movement to the householder is good, but not heavy enough to create a premium wholesale market except in pea. All steam sizes are soft and some independent contracts on No. 1 buckwheat have been closed at \$2.35.

Householders Hold Back

The retail trade is much disturbed because householders in many cases have refused to place their usual fill-up orders at the present prices. These prices are generally about \$1 above the



Car Loadings and Supply

	Cars Loaded— All Coal Cars	
Week ended March 27, 1926.....	967,838	171,413
Preceding week.....	977,209	183,205
Week ended March 28, 1925.....	931,395	140,889
	Surplus Cars— All Coal Cars	
March 31, 1926.....	246,549	104,280
March 22, 1926.....	213,780	79,551
March 31, 1925.....	344,959	185,724

prices in effect last April. Some price-cutting has been resorted to on desirable business, but for the most part the householder announces that he will postpone his buying indefinitely.

Cut Retail Prices at Baltimore

Baltimore retailers are offering hard coal to the householder at a cash discount of 50c. per ton. The new cash prices are: Broken coal, \$15; egg, \$15.50; stove, \$16; nut, \$15.50; pea, \$12. These prices represent reductions of 50c. to \$1 per ton from the winter basis. The experiment is frankly announced as a move to reduce the number of slow accounts on the dealers' books.

Stagnation threatens the Connellsville market in spot coke. Contract deliveries are taking care of the furnace demand and most of the foundries are protected until June 30. Demand from miscellaneous consumers is small. Spot furnace coke last week was \$3@ \$3.25, with the top price ruling only on small lots. Spot foundry coke has dropped to \$4.25@ \$4.75.

Production is closely regulated to orders and there is little surplus at the ovens. Output for the week ended April 3, according to the Connellsville *Courier* totaled 180,850 tons. Furnace oven production was 102,000 tons, a decrease of 2,800 tons when compared with the preceding week; merchant oven output was 78,850 tons, a decrease of 3,980 tons.

Self-Regulation in Business
To Engage U. S. Chamber

Representatives of more than 1,400 business organizations located in every state in the Union have been invited to attend the three-days' annual meeting of the Chamber of Commerce of the United States to be held in Washington May 11 to 13.

The major subject, around which all the discussions of the meeting will center, will be "Self-Regulation in Business." Prominently featured on the program are two additional subjects, namely, "Local and State Taxation and Budgeting," and "Relations of the States to the Federal Government."

High government and state officials and business men of national prominence will take part in the discussions. Among the speakers will be Governor Albert C. Ritchie, of Maryland; John W. O'Leary, president of the Chamber of Commerce of the United States; Fred I. Kent, vice-president, Bankers Trust Company, New York; Julius H. Barnes, formerly head of the United States Grain Corporation, New York; Dr. Julius Kline, director of the Bureau of Foreign and Domestic Commerce; S. W. Wade, Superintendent of Insurance, Raleigh, N. C.; A. L. Humphrey, president, Westinghouse

World's Coal Production During 1925
Exceeds That of Two Preceding Years

World's total production of all coal in 1925 is estimated by the U. S. Bureau of Mines at approximately 1,368,000,000 metric tons. This output, when compared with the revised figures of production for 1924 is an increase of 13,400,000 metric tons. There were some notable increases in certain of the coal-producing countries, and rather pronounced decreases in others. In the United States, while there was a great decline in the anthracite output for the year, amounting to 23,400,000 tons,

when compared with 1924, this was more than offset by the production of bituminous coal, which amounted to nearly 36,000,000 more than a year ago. Countries, other than the United States, which showed greatly increased production in 1925 over 1924 were France, Germany and Russia, while Canada, Czechoslovakia, Hungary, Poland and the United Kingdom showed decreases. The following table summarizes information received by the Bureau of Mines up to March 13, 1926:

Coal Produced in Principal Countries of the World,
Calendar Years 1923, 1924 and 1925

		(In metric tons of 2,204.6 lb.)		
		1923	1924	1925
Country				
North America				
Canada	{ Coal.....	12,163,901	9,138,841	8,626,000
	{ Lignite.....	3,249,605	3,233,459	3,284,723
United States	{ Anthracite.....	84,675,282	79,765,491	56,350,000
	{ Bituminous and lignite.....	512,161,770	438,790,754	474,455,000
Other countries.....		(a)	(a)	(a)
South America.....		1,807,000	2,106,000	(a)
Europe				
Belgium.....		22,922,340	23,361,910	23,133,160
Czechoslovakia	{ Coal.....	12,347,251	15,178,942	12,550,323
	{ Lignite.....	16,265,530	20,459,690	18,041,040
France	{ Coal.....	37,682,235	44,011,240	48,033,564
	{ Lignite.....	861,435	944,180	
Germany	{ Coal.....	62,316,134	118,768,748	132,729,097
	{ Lignite.....	118,784,997	124,637,201	139,789,714
Saara b.....		9,192,275	14,032,120	c 12,940,000
Hungary.....		7,688,033	7,077,680	6,200,000
Netherlands	{ Coal.....	5,595,478	6,180,182	6,850,000
	{ Lignite.....	54,185	191,202	
Poland	{ Coal.....	36,079,997	32,224,680	c 28,800,000
	{ Lignite.....	171,035	88,038	c 62,000
Russia.....		d 14,504,300	e 13,918,000	c 19,000,000
Spain	{ Coal.....	5,971,446	6,127,586	c 6,100,000
	{ Lignite.....	394,268	411,773	c 400,000
United Kingdom	{ Great Britain.....	280,430,369	271,405,414	250,630,000
	{ Ireland.....	(a)	(a)	(a)
Other countries.....		(a)	(a)	(a)
Asia				
China.....		19,955,000	20,969,000	20,000,000
India, British.....		19,972,376	21,516,491	c 20,100,000
Japan (inc. Taiwan and Karafuto):				
Coal.....		30,417,012	31,617,277	(a)
Lignite.....		151,462	176,764	(a)
Other countries.....		(a)	(a)	(a)
Africa				
Rhodesia, Southern.....		559,999	591,526	689,200
Union of South Africa.....		10,810,897	11,331,125	12,996,000
Other countries.....		(a)	(a)	(a)
Oceania				
Australia:				
New South Wales.....		10,646,693	11,804,688	11,200,000
Other States.....		2,190,406	2,303,156	(a)
New Zealand.....		2,001,450	2,116,642	(a)
Total.....		1,359,900,000	1,355,000,000	1,368,000,000

(a) Estimate included in total. (b) Territory under French control. (c) Estimated from monthly figures as follows: The Saar and India, 11 months; Poland and Spain, 10 months; Russia, 9 months. (d) Russia in Asia included under Russia in Europe. (e) Data for operating year, Oct. 1, 1923 - Sept. 30, 1924.

Air Brake Co., Pittsburgh; Milton E. Marcuse, president, Bedford Pulp & Paper Co., Richmond, Va.; John B. Miller, president, Southern California Edison Co., Los Angeles; E. T. Meredith, former Secretary of Agriculture, Des Moines, Iowa; A. J. Brosseau, president, Mack Truck Co., Inc., New York, and R. Goodwyn Rhett, president, Peoples National Bank, Charleston, S. C.

With a view to facilitating the discussions, the conference will be divided into nine group meetings, each representing a particular branch of American business. These groups are as follows: Agriculture, civic development, domestic distribution, finance, foreign commerce, insurance, manufacture, natural resources production and transportation and communication. The natural resources production group will discuss "Hydro-electric Power"; "Coal, Lumber and Oil"; "Desirability of Self Government in Industry—How to Accomplish it in These Industries."

Encouraging Fuel Research

Walter Barnum, of New York City, president of the Pacific Coast Co., operating large bituminous coal mines in the State of Washington, has been appointed to represent the National Coal Association on the advisory committee of the Massachusetts Institute of Technology in respect to a graduate course in gas and fuel engineering. The growing realization of the bituminous coal industry that fuel research activities should be encouraged is reflected not only in this appointment but in the financing by the National Coal Association of a graduate research fellowship in low-temperature distillation at Carnegie Institute of Technology for the academic year 1925-26.

The experimental investigations in gas and fuel engineering which will be made in connection with the graduate course at Massachusetts Tech embrace a list of twelve major subjects.

Foreign Market And Export News

Welsh Loadings Heavier; Future of Industry Hurts Sales for May Deliveries

London, England, March 30.—Shipments of coal from the Welsh ports have been on a heavier scale during the past few days on account of the Easter holidays, and the improved weather conditions have enabled ships to arrive at the docks on schedule. At most of the docks better working has enabled the large standing stocks of coal to be cleared, with the result that nearly all of the collieries are again operating on full time. Deliveries for the most part have been in the nature of clearing off arrears, and new business has been only moderate.

For shipment after Easter the trade has fallen off a little, though this may be put down largely to the uncertainty existing as to what will happen in the industry at the end of April. Because of this uncertainty, operators are showing little tendency to enter into fresh obligations except at greatly advanced prices.

British Coal Exports Decline

British coal exports in February totaled 4,349,000 tons, which is 4,000 tons less than in February, 1925. The decrease of 176,000 tons in shipments to France was the largest decline. The increase of 195,000 tons in sales to the United States was the principal gain. Sweden, Spain, Algeria and Gibraltar bought in substantially reduced volume.

Argentine Coal Imports High In February

During the four weeks ending Feb. 19 Argentine coal imports reached 220,195 metric tons as compared with 342,047 received during the thirty-one days preceding, cables Commercial Attaché Edward F. Feely, Buenos Aires, to the Department of Commerce. Although not so large during the period just ended as in the foregoing four weeks, the weekly average is higher than it has been for several months.

Of the quantity received during the period covered by the cabled report, 189,484 tons came from Great Britain, 26,719 from Germany and 3,992 from

There is a popular feeling, however, that the difficulties expected at the end of April will be satisfactorily tided over and that there will be no national stoppage. How these difficulties will be dispensed with without the aid of a subsidy or "temporary assistance," as the current phrase has it, is not explained.

Contract inquiries on the market include one for 150,000 metric tons for the Egyptian State Rys. and the Uruguayan Electricity Department is inviting tenders for supply until June, 1927. Prices generally are stronger.

The Newcastle market is uncertain on account of the difficulties which are expected on a national scale on May 1. There is plenty of inquiry for April shipment, though little business is being done. Prices are steady. Orders include 40,000 tons of gas coals for Genoa, 12,000 tons of gas coals for Malmo and 10,000 tons of gas coals for Gothenburg.

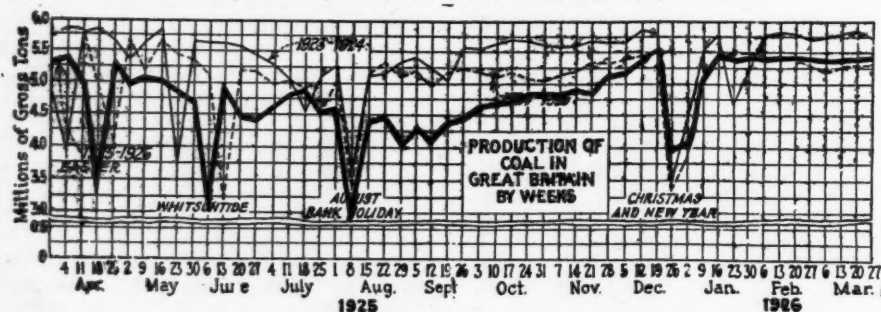
Output by British collieries during the week ended March 27, according to a special cable to *Coal Age*, totaled 5,415,000 gross tons, compared with 5,370,000 tons the preceding week.

the United States. Quotations c.i.f. Buenos Aires are as follows: British, 36s. (\$8.75); German, 38s. (\$9.24) and American—no quotations.

Austrian Consumption Declines

The 1925 consumption of coal in Austria declined more than 250,000 metric tons from the 1924 total, according to provisional figures recently issued by the Austrian Ministry of Commerce. These figures show a 1925 total of 8,429,416 tons, of which 3,157,736 tons, including 3,012,558 tons of lignite, was produced within the country. Consumption of domestic coal, however, was more than 235,000 tons in excess of that for 1924.

Austrian coal and coke imports totaled 5,271,680 metric tons in 1925. Of this quantity, 4,252,789 tons was bituminous, 505,483 tons, lignite and 513,408 tons, coke. This represented a decrease of 493,175 tons from the 1924 importation. Bituminous and lignite imports decreased 285,130 tons and 242,050 tons respectively. Imports of coke increased 134,005 tons.



Soviet Coal Output Gaining

Figures received by the Russian Information Bureau from the State Planning Commission show heavy gains in coal output by the Soviet Union during January, 1926, as compared with the corresponding month a year ago. Coal production was 45 per cent greater than in January, 1925, standing at 2,007,000 tons in January, 1926, as against 2,093,000 tons in December. Petroleum output of 636,000 tons was 10,000 tons less than in December, but 21 per cent heavier than in January, 1925.

Export Clearances, Week Ended April 8

FROM HAMPTON ROADS	
For Brazil:	Tons
Br. Str. Betwa, for Rio de Janeiro...	4,986
Br. Str. Trevanion, for Rio de Janeiro	6,134
Br. Str. Scoresby, for Rio de Janeiro	5,461
Br. Str. Eastgate, for Santos.....	5,982
Br. Str. Lady Kathleen, for Rio de Janeiro	4,998
For British West Indies:	
Br. Str. Orangemoor, for Barbados..	6,500
For Italy:	
Ital. Str. Mincio, for Porto Ferrajo..	6,760
For Danish West Indies:	
Br. Str. Teesbridge, for Curacao....	5,673
For Bermuda:	
Swed. Str. Scania, for Hamilton....	764
For Egypt:	
Br. Str. City of Salisbury, for Port Said	2,083
For Dominican Republic:	
Nor. Str. Elna E, for Santo Domingo	283
For Argentina:	
Br. Str. Harpalion, for Buenos Ayres	5,898
For Costa Rica:	
Nor. Str. Hovland, for Port Limon..	1,006
FROM BALTIMORE	
For Italy:	
Ital. Str. Valdirosa, for Naples.....	6,633
For Gibraltar:	
Jap. Str. Jufuku Maru.....	7,610

Hampton Roads Coal Dumpings*

(In Gross Tons)			
	Apr. 1	Apr. 8	
N. & W. Piers, Lambert's Pt.:			
Tons dumped for week.....	172,261	169,964	
Virginia Piers, Sewalls Pt.:			
Tons dumped for week.....	91,945	107,355	
C. & O. Piers, Newport News:			
Tons dumped for week.....	146,982	168,578	

* Data on cars on hand, tonnage on hand and tonnage waiting withheld due to shippers' protest.

Pier and Bunker Prices, Gross Tons

PIERS			
	April 3	April 10†	
Pool 1, New York....	\$5.50@5.75	\$5.50@5.75	
Pool 9, New York....	5.10@ 5.25	5.10@ 5.25	
Pool 10, New York....	4.75@ 5.00	4.75@ 5.00	
Pool 11, New York....	4.50@ 4.75	4.50@ 4.75	
Pool 9, Philadelphia..	5.10@ 5.40	5.10@ 5.40	
Pool 10, Philadelphia..	4.80@ 5.15	4.80@ 5.15	
Pool 11, Philadelphia..	4.25@ 4.50	4.25@ 4.50	
Pool 1, Hamp. Roads.	4.25@ 4.35	4.25@ 4.35	
Pool 2, Hamp. Roads.	4.15@ 4.25	4.20@ 4.30	
Pools 5-6-7, Hamp. Rds.	3.95@ 4.00	4.00@ 4.10	
BUNKERS			
Pool 1, New York....	\$5.75@6.00	\$5.75@6.00	
Pool 9, New York....	5.35@ 5.50	5.35@ 5.50	
Pool 10, New York....	5.00@ 5.25	5.00@ 5.25	
Pool 11, New York....	4.75@ 5.00	4.75@ 5.00	
Pool 9, Philadelphia..	5.35@ 5.65	5.35@ 5.65	
Pool 10, Philadelphia..	5.05@ 5.40	5.05@ 5.40	
Pool 11, Philadelphia..	4.50@ 4.75	4.50@ 4.75	
Pool 1, Hamp. Roads.	4.35	4.50	
Pool 2, Hamp. Roads.	4.25	4.30	
Pools 5-6-7, Hamp. Rds.	4.00	4.10	

Current Quotations, British Coal, f.o.b. Port, Gross Tons

Quotations by Cable to Coal Age			
	April 3	April 10†	
Cardiff:			
Admiralty, large.....	24s.6d.	24s.6d.@25s.	
Steam smalls.....	14s.3d.	14s.6d.	
Newcastle:			
Best steams.....	18s.	18s.	
Best gas.....	20s.	20s.@22s.	
Best bunkers.....	16s.6d.	17s.	

Advances over previous week shown in heavy type; declines in italics.

Coming Meetings

Virginia Coal Operators' Association. Annual meeting, April 17, Norton, Va. Secretary, C. B. Neel, Norton, Va.

American Welding Society. Annual convention, 29 West 39th St., New York City, April 21-23. Secretary, M. M. Kelly, 29 West 39th St., New York City.

California Retail Fuel Dealers Association. Thirteenth annual convention at Del Monte, Calif., April 22-24. Secretary, J. B. Muir, Oakland, Calif.

Mine Inspectors' Institute of America. Annual meeting, Seventh Avenue Hotel, Pittsburgh, Pa., May 11-13. Secretary, G. B. Butterfield, Hartford, Conn.

International Railway Fuel Association. Eighteenth annual convention, Hotel Sherman, Chicago, Ill., May 11-14. Secretary, J. B. Hutchinson, Omaha, Neb.

National Retail Coal Merchants' Association. Ninth annual convention, New Willard Hotel, Washington, D. C., May 17-19. Resident vice-president, Joseph E. O'Toole, Transportation Bldg., Washington, D. C.

Electric Power Club. Convention at The Homestead, Hot Springs, Va., May 24-27. Secretary, S. N. Clarkson, B. F. Keith Bldg., Cleveland, Ohio.

The American Mining Congress. Annual Exposition of Coal Mining Equipment, May 24-28, at Cincinnati, Ohio, in conjunction with the annual meeting of practical operating officials. Assistant secretary, E. R. Coombes, Washington, D. C.

International Geological Congress. The fourteenth congress will be held in Madrid, Spain, commencing May 24, 1926. From May 5 to 22 excursions of interest to the visiting delegates will be arranged. Information concerning the congress can be obtained from the secretary of the organizing committee, Enrique Dupuy de Lome, Plaza de los Mostenses, 2, Madrid, Spain.

Midwest Retail Coal Merchants Association. Annual meeting, May 25 and 26, at Kansas City, Mo. Secretary, James P. Andriano, St. Joseph, Mo.

Western Canada Fuel Association. Annual meeting at Winnipeg, Manitoba, Can., May 27 and 28. Secretary, W. H. Morrison, Winnipeg.

American Wholesale Coal Association. Annual meeting at Toledo, Ohio, June 7-9. Treasurer, R. B. Starek, Union Fuel Bldg., Chicago, Ill.

Association of Iron & Steel Electrical Engineers. Exposition and convention at Hotel Sherman, Chicago, Ill., June 7-10. Secretary, J. F. Kelly, 1007 Empire Bldg., Pittsburgh, Pa.

National Coal Association. Ninth annual meeting, June 9-11, at Drake Hotel, Chicago, Ill. Executive secretary, Harry L. Gandy, Southern Bldg., Washington, D. C.

American Institute of Electrical Engineers. Annual convention, White Sulphur Springs, W. Va., June 21-25. Secretary, F. L. Hutchinson, 29 West 39th St., New York City.

New Equipment

Wedge-Shaped Tooth Sockets Part of Dipper Front

The new $\frac{3}{4}$ -yd. dipper of the Erie Steam Shovel Co., Erie, Pa., features four tapered sockets for the teeth cast as integral parts of the manganese steel lip, which is 1 in. thick and extends 9 in. up on both sides. The placing of the outside teeth at the extreme corners is claimed to be a considerable advantage when side cutting on heavy banks. The teeth are reversible and made of chrome manganese steel. No bolts or rivets are necessary to hold the teeth, which are fastened by firmly wedging them against soft steel shims. The teeth are easily removed by driving a small drift wedge under them through a hole provided in the back of the socket for this purpose.



Flush Outer Teeth Clear Wider Path For Edge of Bucket

Tapered sockets cast as integral parts of the manganese steel lip permit teeth to be set in bucket and removed with ease.

Synchronous Motors with High Starting Torque

Heretofore, synchronous motors have had a low starting torque. The General Electric Co. of Schenectady, N. Y., has, however, designed and is now marketing a line of these machines for general-purpose application. These motors are recommended to drive loads, the torque requirements of which have been heretofore met by standard squirrel-cage induction motors. The new machines known as types TS and QS of the 7,500 series, range from 20 to 150 hp. at speeds of 1,200, 900, 720, and 600 r.p.m. at 60 cycles.

These motors meet all the Electric Power Club requirements for general-purpose machines and give satisfactory starting characteristics. They are of strong construction and with minor changes will operate at either unity, 90-per cent or 80-per cent power factor. They are rated at 40 deg. continuous

load at unity power factor and at 90- and 80-per cent power factor, the temperature of the stator will not exceed 40 deg., with 50 deg. on the rotor.

Adequate starting torque is the most important factor in the design of the new motors, each machine being guaranteed to deliver the same starting torque with the same inrush current as will a standard squirrel-cage induction motor of similar rating. At full-line voltage the motor will accelerate and synchronize a load whose torque is 100 per cent of the rated full-load torque of the machine.

Revolving fields are employed on these motors. These are of the salient-pole type and are separately excited, ordinarily by means of direct-connected exciters. One of the principal advantages inherent in these machines lies in the fact that the amortisseur windings are not limiting factors upon the temperature rating. These starting windings will not become dangerously hot before the primary motor coils are overheated. Thus adequate overload protection in the alternating current lines will also protect the amortisseur windings from overheating whether as a result of failure to start or because of operation without excitation.

Semi-automatic control is recommended for these motors. In this control field excitation is automatically applied. The motor is started by means of a manually operated, self-contained compensator. The manipulation necessary to start one of these machines is, therefore, identical with that entailed in starting a squirrel-cage induction motor.

Powder in Pellets Safer and Better Than in Grains

A new form of explosive, known as pellet powder, which tends to make coal mining safer, has been developed by E. I. du Pont de Nemours & Co., Inc., of Wilmington, Del. In substance it is the same product as black blasting powder but instead of being in granular form, is made up in pellets which are wrapped in a thin paraffined paper shell similar to a dynamite cartridge which is then packed in a wooden box. It has been extensively tested in the field and when used the danger of the steel keg in which black blasting powder is packed is eliminated. Steel is a good conductor of electricity. In the past many fatal accidents have occurred because such kegs came in contact with electric wires or cables causing the contents to explode.

Many miners are in too big a hurry to open a metal keg by turning back the lugs and removing the bung as designed by the manufacturers. To save time they drive a pick through the top and pour the powder out through the opening thus made. Occasionally enough heat is developed by the pick to ignite the powder and an explosion results. Ignitions have also taken place from

driving a wooden point through the top of the keg.

Ordinary black blasting powder is granular, and in the small sizes, especially, is quite free running. Thus there is always danger of a charge leaking down the borehole and becoming ignited at the collar by the spit of the fuse or from the miner's squib.

Transferring powder from keg to jack or from jack to cartridge if an open light is present is dangerous because an air current may carry the dust from the powder to the light thus causing an explosion. Sparks dropping into a keg or jack of blasting powder have caused similar accidents.

NEW POWDER NON-RUNNING

Pellet powder is said to have practically none of these disadvantages. While it is not a permissible explosive, and consequently is not safe for use in gaseous mines, its being packed in wooden boxes renders it free from the hazard of firing from accidental contact with charged wires. There is no temptation to drive a pick through a box of pellet powder as the lid can be pried off quickly and safely. The pellets are wrapped in paper and, being used in this condition do not tend to run down the bore hole to the collar, thus laying a train along which fire may run back to the main charge. They are not dusty and do not require to be transferred into a powder jack as they are already made up into cartridge form. Moreover, being of a uniform size, it is possible to gage the quantity of explosive needed to bring down the coal much more accurately than is possible with a granular explosive that is poured into a cartridge made by rolling paper over a pin which, in size, may be anything from a tamping stick to a pick handle. It is said that much explosive can be saved because a charge of pellet powder is easier to gage than is one composed of granular powder.

Experiments indicate that much less smoke is evolved from pellet than from granular powder. No explanation can now be given to account for this phenomenon.

It is said that the production of lump coal when pellet powder is used has been highly satisfactory. Although in some beds of coal its action was little or no better than that of granular powder, these were much in the minority. By far the greater number of reports show a readily noticeable increase in the

quantity of lump produced by the use of pellet powder.

This new explosive can be fired by means of either fuse or electric squib, the latter being the ideal method as it permits of closer confinement. The electric squib also has the advantage in that the loader has control of the exact time when the shot is to be fired and there is much more freedom from smoke than when fuse is employed. The holes through the middle of the pellets are so made that when used with fuse, this can be inserted in one end of the hole, turned over upon itself and jammed into the other end of the hole, making a hitch that holds fast so that the fuse will not pull out. Pellet powder can be fired by means of miners' squibs but this method is not recommended.

Pellet powder heretofore never has been made in the United States except experimentally, although it is extensively used in France and Great Britain. In 1912 some experimental lots were tried in some of the coal fields of West Virginia. Though the results were promising, the necessity for concentrating every effort during the war on standard explosives put an end to these experiments. Last fall, however, further experimental work was done with this explosive and as a result two mills have been equipped for its manufacture. At the present time it is made in pellets of 1½, 1¼ and 2 in. diameter.

It is claimed that no combination gives greater safety than pellet powder and an electric squib except as regards the liability to ignite gas or coal dust.

A Portable Diaphragm Pump For Construction Work

Portable pumping outfits, such as the one shown in the accompanying illustration, can be used to advantage on construction jobs, where it is necessary to keep an excavation free from water. The illustration shows a double 4-in. closed-top diaphragm force pump having a capacity of 16,000 to 20,000 gal. per hour against a head of 60 to 70 ft. The pump is made by the Novo Engine Co., of Lansing, Mich., and is operated by a Novo UF two-cylinder 3- to 6-hp. gas engine. This engine has a 180-deg. opposed-throw counterbalanced crankshaft running in tapered roller bearings.

Diaphragm pumps usually work under conditions not conducive to long life of

wearing parts. The self-oiling speed-reducing unit used on the pumps shown completely incloses and protects all gearing, eliminating many disadvantages of the open-gear type pumps. These pumps are surplus-powered and smooth running, thus minimizing the strain upon the engine and pump, and lengthening the life of the outfit.

Industrial Notes

The Chicago Pneumatic Tool Co. recently acquired George Oldham & Sons Co. of Baltimore. The manufacture of the Oldham products which are continued will be conducted at the Detroit plant, 6201 Second Boulevard. The sales will be combined and handled from the Chicago Pneumatic Tool Co.'s branches as well as through their domestic and foreign agency connections.

R. J. Quinlan is now a sales engineer for Street Bros. Machine Works, Chattanooga, Tenn., makers of hoists, cableways, derricks, draglines, skidders, etc. Mr. Quinlan was previously with the Bluefield Supply Co. for four years as manager of the electrical supply department. Before this, he was for a number of years with Fairbanks, Morse Co. in the sales department. Mr. Quinlan has a wide knowledge of the coal fields.

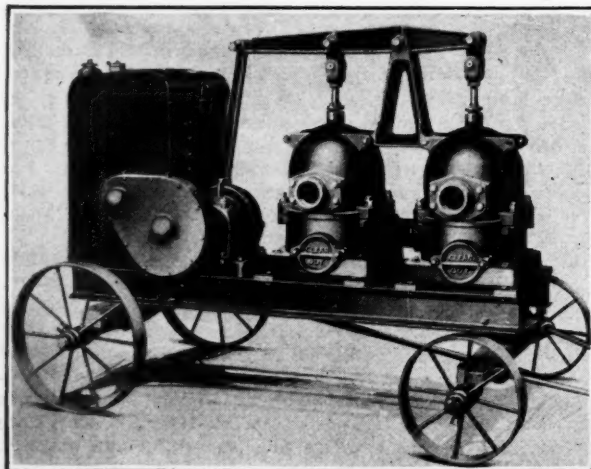
The Trico Fuse Mfg. Co., Milwaukee, Wis., has rebuilt and enlarged its electrical testing laboratory, with latest and best equipment installed. The offices also have been enlarged and in the factory new lighting equipment has been installed and production facilities considerably increased. The sales organization has been increased by the appointment of Herbert E. Hartstein as eastern sales manager; Philip Rypinski as central sales manager, and Fred C. Geiler as western sales manager.

The Hazard Manufacturing Co., Wilkes-Barre, Pa., announces the appointment of Laurence W. Bevan as general manager; William S. Hart as special representative in the oil fields of the United States, with headquarters at Wilkes-Barre, and of Thomas A. Keefe as district manager at Chicago.

Headquarters of the Western district of the Graybar Electric Co. has been transferred from St. Louis to Kansas City, and H. N. Goodell has been appointed as district manager and manager at Kansas City.

Lawrence E. Buzard has been appointed general sales manager of the Fate-Root-Heath Co., manufacturers of Plymouth gasoline locomotives, Plymouth, Ohio, succeeding H. R. Sykes, who recently resigned. Mr. Buzard, who was formerly assistant sales manager, has been with the company a number of years. He will have direct charge of locomotive sales and thirty-four district sales representatives.

H. C. Osman, sales manager of the Nugent Steel Castings Co., Chicago, has been elected secretary of the company. He will continue to have charge of the sales for the company. C. A. MacDonald, formerly secretary, has been elected treasurer.



Diaphragm Pump

Truck carries its own gas engine of 3 to 6 hp. The pumps have a capacity of 16,000 to 20,000 gal. per hour against a head of 60 to 70 ft. Said to have unusually long life.